Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S1	0	("procurementanddatabaseandma nagementandnetworkand(product withdata)and(engineeringwithreco rds)and(vendorwithdata)and@ad< 20000907").PN.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/03/31 15:27
S2	1	procurement and database and management and network and (product with data)and(engineering with records)and(vendor with data)and @ad<"20000907"	USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/03/31 15:29
S3	63	procurement and database and management and network and (product with data)and(vendor with data)and @ad<"20000907"	USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/03/31 15:29
S4	3	707/1.ccls. and S3	USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/03/31 15:30
S5	2	707/100.ccls. and S3	USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/03/31 15:30
S6	4	707/200.ccls. and S3	USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/03/31 15:30

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Engineering Change Orders

T his chapter tells you everything you need to know to use engineering change orders, including:

Overview of Engineering Change Orders

Engineering Change Orders (ECOs) enable you to control new item revisions and bill of material changes. With one ECO, you can group several bill of material changes that affect one or more bills.

You can define ECOs for all types of items and bills, including:

- manufacturing and engineering items
- bills and their components
- planning, model, option class, and standard items
- primary and alternate bills of material

An ECO specifies changes to one or more items that are logically related to each other, such as a new product introduction. Each ECO specifies changes for one or more revised items and each revised item can have one or more revised components.

Depending on the ECO type, an ECO can update manufacturing bills only or both manufacturing and engineering bills. If the ECO type can only update manufacturing bills, you cannot revise engineering items.

You can add either engineering or manufacturing items as components on engineering bills. However, you can only add manufacturing items as components on manufacturing bills.

Revised Items

Revised items can be either items or bills. If a revised item is a bill, you can change the item revision and component information (revised components). If a revised item defines a new bill, you can create revised components by copying an existing bill.

Engineering changes can be defined by date and or model/unit number effectivity. You should assign an effective date and model / unit number for each revised item on an ECO. Engineering uses this information to implement the ECO and to identify past due ECOs. Each time you change a revised item's effective date, Engineering adds an entry to list effective date changes. You can also specify an early effective date that determines the earliest date that you can manually implement a change. If you do not enter an early effective date, you can manually implement the change at any time. You can reschedule an ECO by entering a new effective date. A date effective revised item can only have date effective revised components.

A unit effective revised item can have both unit and/or date effective components. All unit effective revised items must have a from end item unit number specified, if the effectivity profile is set to Unit effectivity. The from end item unit number will be null and non–updatable for date effective revised items. The to end item unit number field will also be null and non–updatable for revised components of date effective revised items If you are implementing a ECO for a unit effective component, the from unit number needs to be specified in the revised item block and the to unit number needs to be specified in the revised components block.

> **Note:** There are two conditions under which revised items are not implemented: if the early effective date is greater than the current date, and if the user does not have access to the item type of the revised item. For example, if the revised item is a model item and the user does not have access to model items, the revised item is not implemented. The same is true for option class, planning, and standard items.

You can control whether Oracle Master Scheduling/MRP plans your proposed changes before implementation. If you have engineering changes that are firm, but whose effective date is in the future, you may want planning to consider those changes. You can choose to plan changes on any pending ECO regardless of the ECO status. Changes to the ECO status or the revised item status will automatically update the MRP active attribute. However, you can always manually set the MRP active attribute as desired.

For each revised item, you can also specify whether Engineering should update work in process material requirements. When you implement such an ECO revised item, Engineering automatically re–explodes and updates the bill of material for all unreleased jobs and repetitive schedules for that item.

Engineering also updates repetitive schedules with statuses of Released, Complete, or On hold accordingly.

Revised Components

You can add, change, or delete bill of material components and their attributes. The components and their attributes have the same restrictions as when you define a bill using Oracle Bills of Material. For example, you can only add components that are standard, model, or option class items for revised items that are model items.

Revisions

When you enter a revised item on an ECO, Engineering displays the current and latest revision of the item. The latest revision could be higher than the current revision if the latest revision is on a pending ECO.

Engineering uses the ENG: Require Revised Item New Revision to control new item revisions for each engineering change. If engineering changes always correspond to new item revisions, set this profile option to Yes. Doing so will force a new item revision for all revised items on an ECO. When you require new item revisions, you can track all engineering changes to an item by revision. For example, you can group related design changes on an ECO and roll revisions for each item to reflect the latest design.

If you define related ECOs at different times, set this profile option to No so you increment the revision only once. You can then define one ECO to change the revised item revision and other ECOs that do not change the item revision. Minor changes that do not affect form, fit, or function of an item may not require new revisions.

See Also

Implementation of ECOs on Jobs and Schedules: page 2 – 52

Bill / Component Validation Rules, *Oracle Bills of Material User's Guide*

Item and Routing Revisions, *Oracle Bills of Material User's Guide*

ECO Revised Item Statuses: page 2 – 58

ECO Access Control

Oracle Engineering controls the access to ECOs and the changes you can specify on them using profile options, security functions, item types, ECO types, and ECO departments.

ECO Types

For each ECO type, you specify if it can update engineering items. Only users whose profile option indicates they can update engineering items can choose ECO types that update engineering items.

Item Types

Oracle Bills of Material and Engineering use two item master attributes to control access to items and to determine the types of items that can be on a bill: BOM Item Type and Engineering Item.

The BOM Item Type item master field divides items into four major types: planning items, model items, option class items, and standard items.

User Profile Options

User profile options control the types of items you can revise on an ECO. You can specify whether a user or responsibility can revise model and option class items, planning items, standard items, or engineering items on ECOs.

Engineering uses the following four profile options to control the types of items you can change on an ECO:

- ENG: Engineering Item Change Order Access (engineering items)
- ENG: Model Item Change Order Access (model and option class items)
- ENG: Planning Item Change Order Access (planning items)
- ENG: Standard Item Change Order Access (standard items)

Engineering enforces security for engineering items by only letting users that are allowed to update engineering items choose ECO types that update engineering items. In addition, to update engineering bills of material for manufacturing items, you must choose ECO types that update engineering items.

Each time you try to add a revised item to an ECO, Engineering checks to see if you can update that item based on its BOM Item Type and your profile options.

For example, you might define several ECO types that can update manufacturing items, and only define one type that can update engineering items.

You might also specify profile options to control access to BOM item types by user, as shown in the following example:

User	ECO Department	Standard Item Access	Planning Item Access	Model / Option Class Item Access	Engineering Item Access
Joe	Product Engineering	Yes	No	No	Yes
Mary	Mfg. Engineering	Yes	No	Yes	No
Fred	Customer Service	No	No	Yes	No
Sue	Material Planning	No	Yes	No	No
Dave	Production	Yes	No	Yes	No

Table 2 – 1 User Profile Options

In the example, Joe can create ECOs that update standard items. Mary can create ECOs that update manufacturing standard items and model / option class items. But Mary is not allowed to update engineering items.

Profile Settings for Changing Bills Only With ECOs

To limit user's access to bills of material only through ECOs, set the following Bills of Material profile options to No:

- BOM: Standard Item Access
- BOM: Planning Item Access
- BOM: Model Item Access

And the following Engineering profile options to Yes:

- ENG: Standard Item Change Order Access
- ENG: Planning Item Change Order Access
- ENG: Model Item Change Order Access
- ENG: Engineering Item Change Order Access.

Profile Settings for Changing Bills With or Without ECOs

With the same seven profile options listed above all set to Yes, bills can be changed with or without ECOs.

ECO Departments

You can assign users to departments and secure each ECO to a department so that only users in that department can access the ECO.

If you do not specify a department for an ECO, any user can access it. If you do not assign a user to a department, they can access all ECOs. Setting the ENG: Mandatory ECO Departments to Yes requires you to specify a responsible department on every ECO.

You can update the responsible department as you release an ECO from the current ECO department. For example, if Product Engineering releases an ECO to Manufacturing Engineering, they can reassign the responsible department so it becomes visible and updatable to users assigned to the Manufacturing Engineering ECO department.

See Also

Oracle Bills of Material Profile Options, *Oracle Bills of Material User's Guide*

Access Control by Item Type, *Oracle Bills of Material User's Guide*

ECO Life Cycle

Engineering uses two ECO status fields to control the ECO life cycle: ECO Status and ECO Approval Status. See: ECO Statuses: page 2 – 58.

You can change an ECO's status. You can open, hold, release, schedule, implement, or cancel a revised item or an ECO. Engineering does not let you set the ECO Status field to Implemented or Scheduled if the approval status has not been set to Approved.

The following example illustrates a typical ECO life cycle:

Sequence	Action	Approval Status	ECO Department
Start creating new ECO	Hold	Not Submitted for Approval	Mfg. Engineering
Complete data entry	Open	Not Submitted for Approval	Mfg. Engineering
Submit approval process		Approval Requested	Mfg. Engineering
Oracle Workflow controls approval process		Approval Requested	Mfg. Engineering
Approve and release	Released	Approved	Production
Production updates date	Scheduled		Production
Effective date arrives	Implemented		Production

Table 2 – 2 ECO Status Flow

ECO Approvals

ECOs can be approved in three ways, two of which require an approval process. The third requires no approval process.

First, the ECO, based on the ECO type in combination with the ECO priority, can be associated with an Oracle Workflow process. Once approval is granted, Workflow automatically updates the approval status.

Second, a simple approval list can be used, which sends an Oracle Alert to all those listed requesting their approval. Once approved, you must manually update the approval status. This approval option does not require an Oracle Workflow process.

The third method is to use neither of the above; the ECO needs no formal approval process and is given the status of Approved.

If the ECO is associated with an Oracle Workflow process, only Workflow may set the status to Approved. If the ECO has an approval list, you must set the status to Approved manually after the ECO has been approved by the appropriate member(s) on the approval list.

If neither is used, the ECO is set to Approved but can be manually rejected.

The following table describes the conditions under which the different approval statuses can be used:

Condition	Valid Approval Statuses
No approval list / no workflow approval process	Approved (default), Rejected
Approval list	Not Submitted for Approval (default), Ready to Approve (Oracle Alert fires), Approval Requested, Rejected, Approved
Workflow approval process	Not Submitted for Approval, Approval Requested, Rejected, Approved, Processing Error

Table 2 – 3   (Page 1 of 1)

See Also

Workflow for ECO Approvals: page 2 – 11

ECO Approval Statuses: page 2 – 59

Workflow for ECO Approvals

Most organizations have some form of approval process before engineering change orders (ECOs) are implemented. By using Oracle Workflow, the approval process can be customized to meet each organization's needs.

Business rules for the approval of ECOs are defined in a workflow process. For each ECO, Workflow manages adherence to these business rules, including:

- submission of the completed ECO for approval via Workflow
- enforced approval process for an ECO type
- communication of messages via Notification Viewer, electronic mail, or web browser
- review of ECO from Notification Viewer
- automatic processing of user responses and update of system
- workflow status indicator for ECOs
- usage of current approval lists (roles) in the workflow process.

Once the ECO is created, Workflow takes over processing.

When Workflow is in control of the approval process, the ECO approval status is set to Approval Requested. Before the approval status is changed, the workflow approval process can be aborted.

Workflow manages the approval process until the entire approval flow is complete. Only then is the ECO approval status updated to either Approved or Rejected. If an error occurs during the Workflow approval process, the approval status is set to Processing Error.

Standard Workflow Process

One workflow process, named "Standard Approval Process," is predefined when Engineering is installed, regardless whether the entire Oracle Workflow product is installed. If the entire Workflow product is installed, you can modify this process or create new processes.

If you use the Standard Workflow Process, you must assign a role to the "Standard Approval Notification" activity. Otherwise, the process will fail.

If the Workflow product is not fully installed, you can alter only the Standard Approval Process.

ECO Approval List Setup

Workflow can use roles whenever an activity involves several users. Approval lists defined in Engineering can be used to create roles. Roles are made up of either one approval list or one employee previously defined with the Enter Person window.

The ECO workflow approval process will notify all persons in the role, regardless if the role is defined using an approval list or an individual employee.

To approve (or reject) the ECO, approvers must respond to the notification. If the approver has an Oracle Applications Object Library account, they can respond to ECO approval requests using either a web browser or the Notification Viewer. If not, the approver can respond via electronic mail, provided their address is defined in the Enter Person window.

ECO Types and Priorities Setup

ECO types can be associated with a workflow process. If you do not associate an ECO type with a workflow process, there can be no workflow approval process for ECOs using that ECO type. If there is an approval list, the ECO cannot be associated with a process.

ECO types that are associated with a workflow process can optionally be associated with an ECO priority. If so, ECOs that use the type/priority combination are approved via Workflow. Doing so enables workflow approval processes to be ranked according to priority.

ECO Approval

The only user intervention required for a workflow approval process is for individual approvers to respond to an ECO approval notification. Once the process is complete, Workflow automatically updates the ECO approval status.

Customizing the Standard Approval Process

Once you install Oracle Engineering, you can view the Standard Approval Process in a Process window using Oracle Workflow Builder.
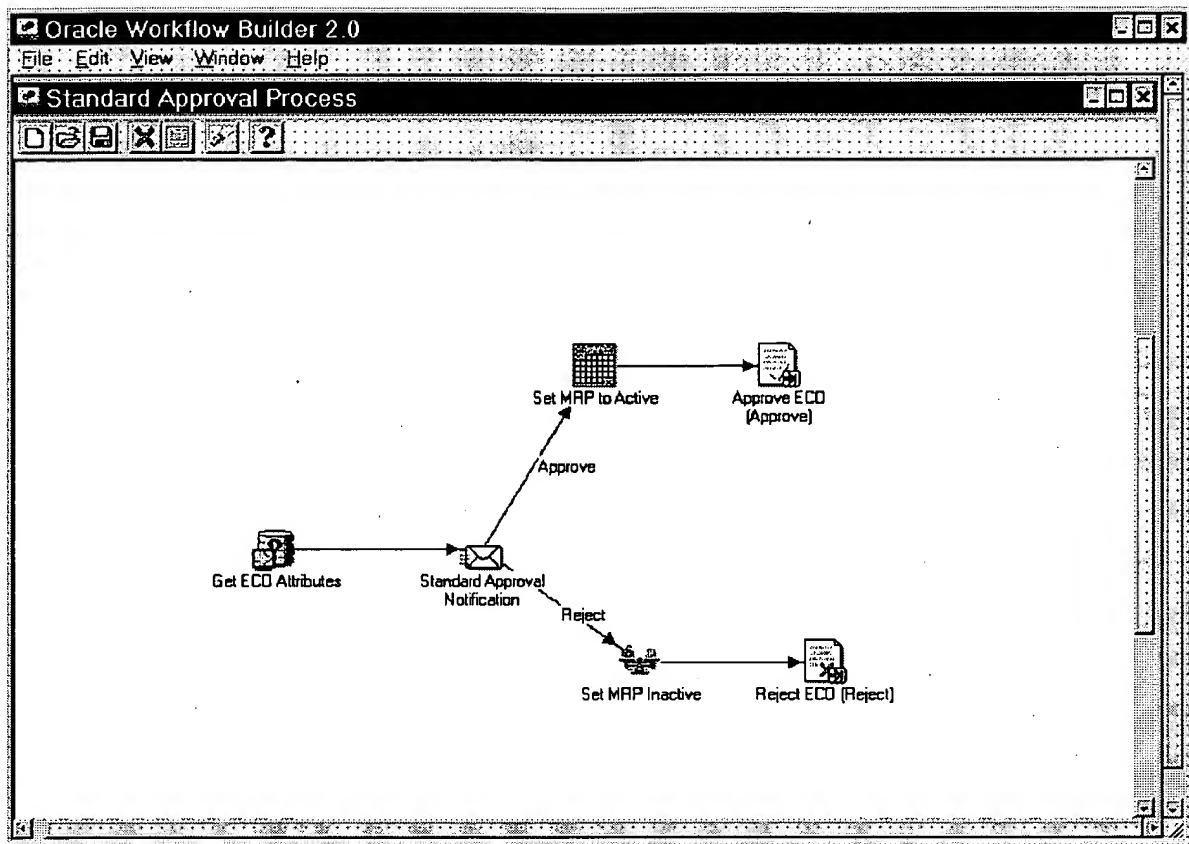
▶ **To Display the Standard Approval Process in Oracle Workflow Builder**

1. Choose Open from the File menu, and connect to the database where you installed Oracle Engineering.

2. Select the ECO Approval item type.

3. Expand the data source, then the ECO Approval item type branch within that data source.

4. Expand the Processes branch within ECO Approval then double–click on the Standard Approval Process activity to display the diagram of the process in a Process window.

Required Modifications

You must make the following modifications to the Standard Approval Process before you can use it to initiate a workflow:

1. Specify an Approval for the ECO Approval Process

   - Choose Load Roles From the Database from the File menu. Select the role you wish to use for an approval.

   Note: A role can represent a person or a group of persons. You must have already defined approvers and/or approval lists in Oracle Engineering.

   - Select the Standard Approval Notification activity to view its properties.

   - Enter Constant as the Performer Type. Select a Performer from the adjacent list of values.

   - Select OK to save your changes.

Optional Modifications

Although you can use the Standard Approval Process as is, you may wish to customize the process further to accommodate your organization's specific needs.

Creating a New Custom Process

You can use the Standard Approval Process for your ECO approvals or create you own approval process using Oracle Workflow. You must have the Oracle Workflow product installed to create your own approval process.

See Also

Oracle Workflow, *Oracle Workflow Guide*

Introduction to Oracle Workflow, *Oracle Workflow Guide*

ECO Approval Process Activities: page 2 – 17

Defining ECO Types: page 1 – 9

Defining ECO Approval Lists: page 1 – 17

Creating an ECO: page 2 – 23

Viewing ECO Approval Status: page 2 – 26

The ECO Approval Item Type

The ECO Approval process is associated with an item type called ECO Approval. This item type represents the domain of all processes and activities used in the ECO Approval process and used by Oracle Engineering.

ECO Approval Item Type Attributes:

Display Name	Description	Type	Length
Approval Status	ECO Approval Status	Text	80
Attribute1	Attribute1	Text	150
Attribute2	Attribute2	Text	150
Attribute3	Attribute3	Text	150
Attribute4	Attribute4	Text	150
Attribute5	Attribute5	Text	150
Attribute6	Attribute6	Text	150
Attribute7	Attribute7	Text	150
Attribute8	Attribute8	Text	150
Attribute9	Attribute9	Text	150
Attribute10	Attribute10	Text	150
Attribute11	Attribute11	Text	150
Attribute12	Attribute12	Text	150
Attribute13	Attribute13	Text	150
Attribute14	Attribute14	Text	150
Attribute15	Attribute15	Text	150
Attribute Category	Attribute Category	Text	30
ECO	Engineering Change Order	Text	30
Change Type	Change Type	Text	10
ECO Dept Code	ECO Department Code	Text	3
ECO Dept Name	ECO Department Name	Text	60
ECO Description	ECO Description	Text	2000

Table 2 – 4   (Page 1 of 2)

Display Name	Description	Type	Length
ECO Status	ECO Status	Text	80
Estimated Eng Cost	Estimated Engineering Cost	Number	
Estimated Mfg Cost	Estimated Manufacturing Cost	Number	
Full Name	Change Requestor	Text	240
Initiation Date	ECO Initiation Date	Date	
Organization Code	Organization Code	Text	3
Organization Name	Organization Name	Text	60
Org ID	Organization ID	Number	
Priority Code	ECO Priority Code	Text	10
Reason Code	ECO Reason Code	Text	10
Rev ID	Revision ID	Number	

Table 2 – 4   (Page 2 of 2)

Summary of the ECO Approval Process

The ECO Approval process consists of nine unique activities as displayed in the process diagram. The ECO Approval workflow begins when you submit an approval requisition from the ECO form in Oracle Engineering. The workflow begins at node 1 with the start activity. At node 2, the function gets all required ECO attributes and sets the item attributes. The ECO Approval status is changed to Approval Requested at node 3 and users on the approval list are notified of the ECO. If the user approves the ECO, the MRP Active ECO attribute is set to YES at node 4 and the approval status is set to Approved at node 5. If the user rejects the ECO, the MRP active attributes is set to NO at node 7 and the ECO approval status is set to Rejected at node 8. The workflow process ends either at node 6 or at node 9 depending on whether the user approves the ECO.

Set MRP to Active   Approve ECO   End (Approve)

Start   Get ECO Attributes   Standard Approval Notification

Approve

Reject

Set MRP Inactive   Reject ECO   End (Reject)
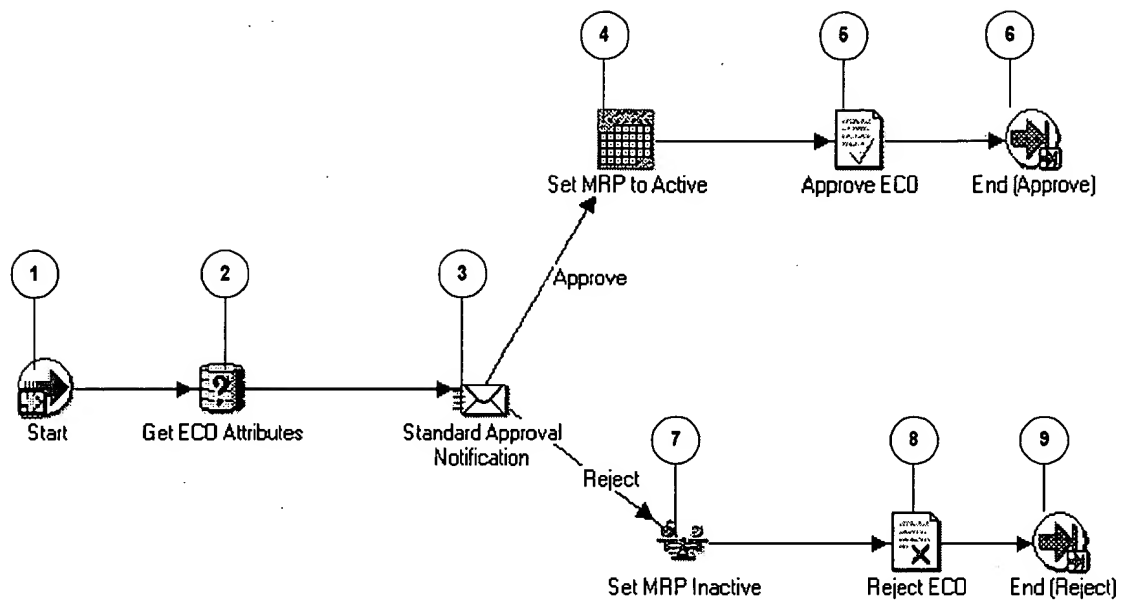
ECO Approval Process Activities

This section provides a description of each activity in the process, listed by the activity's display name. The legend for the information displayed is provided below, immediately followed by a list of activities.

Start (Node 1)

This is a standard function activity that simply marks the start of the process.

- Function – *WF_STANDARD.NOOP*
- Result Type – None
- Required – Yes
- Prerequisite Activities – None
- Item Attributes Set by Function – None
- Item Attributes Retrieved by Function – None

Get ECO Attributes (Node 2)

This function gets all required ECO attributes and sets the item attributes.

- Function –
  ENG_WORKFLOW_API_PKG.GET_ECO_ATTRIBUTES

- Result Type – None

- Required – Yes

- Prerequisite Activities – None

- Item Attibutes Set by Function – CHANGE_NOTICE
    - ECO_DESCRIPTION
    - ECO_STATUS
    - INITIATION_DATE
    - PRIORITY_CODE
    - REASON_CODE
    - ESTIMATED_ENG_COST
    - ESTIMATED_MFG_COST
    - ATTRIBUTE_CATEGORY
    - ATTRIBUTE1
    - ATTRIBUTE2
    - ATTRIBUTE3
    - ATTRIBUTE4
    - ATTRIBUTE5
    - ATTRIBUTE6
    - ATTRIBUTE7
    - ATTRIBUTE8
    - ATTRIBUTE9
    - ATTRIBUTE10
    - ATTRIBUTE11
    - ATTRIBUTE12
    - ATTRIBUTE13
    - ATTRIBUTE14

- ATTRIBUTE15
- APPROVAL_STATUS
- ORGANIZATION_CODE
- ORGANIZATION_NAME
- FULL_NAME
- CHANGE_TYPE
- ECO_DEPT_NAME
- ECO_DEPT_CODE

- Item Attibutes Retrieved by Function – None

Standard Approval Notification (Node 3)

This is a standard approval notification that requests approval from users on the approval list.

- Message – Standard Approval Message
- Result Type – ECO Approval
- Required – Yes
- Prerequisite Activities – Standard Approval Message
- Expand Roles – No
- Notification Function – None

Set MRP to Active (Node 4)

After the user has approved the ECO, this function sets the MRP Active attribute to on for revised items with status of Open and Scheduled. This can be used to create MRP demand when the ECO's approval status is updated to Approved.

- Function – ENG_WORKFLOW_API_PKG.SET_MRP_ACTIVE
- Result Type – None
- Required – Yes
- Prerequisite Activities – Standard Approval Notification
- Item Attributes Set by Function – None
- Item Attributes Retrieved by Function – None

Approve ECO (Node 5)

This function sets the status of the ECO to Approved.

- Function – ENG_WORKFLOW_API_PKG.APPROVE_ECO
- Result Type – None
- Required – No
- Prerequisite Activities – Standard Approval Notification
- Item Attributes Set by Function – None
- Item Attributes Retrieved by Function – None

End (Approve) (Node 6)

This function ends the ECO approval process with a status of Approved.

- Function – WF_STANDARD.NOOP
- Result Type – None
- Required – No
- Prerequisite Activities – None
- Item Attributes Set by Function – None
- Item Attributes Retrieved by Function – None

Set MRP Inactive (Node 7)

After the user has rejected the ECO, this function sets the MRP Active attributes to off for revised items with status of Open and Scheduled.

- Function – ENG_WORKFLOW_API_PKG.SET_MRP_INACTIVE
- Result Type – None
- Required – Yes
- Prerequisite Activities – Standard Approval Notification
- Item Attributes Set by Function – None
- Item Attributes Retrieved by Function – None

Reject ECO (Node 8)

This function sets the status of the ECO to Rejected.

- Function – ENG_WORKFLOW_API_PKG.REJECT_ECO

- Result Type – None
- Required – No
- Prerequisite Activities – Standard Approval Notification
- Item Attributes Set by Function – None
- Item Attributes Retrieved by Function – None

End (Reject) (Node 9)

This function ends the ECO approval process with a status of Rejected.

- Function – WF_STANDARD.NOOP
- Result Type – None
- Required – No
- Prerequisite Activities – None
- Item Attributes Set by Function – None
- Item Attributes Retrieved by Function – None

See Also

Oracle Workflow, *Oracle Workflow Guide*

Defining Engineering Change Orders

An engineering change order (ECO) controls item revisions and bill of material changes. ECOs specify changes to one or more items and each of these items can have one or more revised components.

Prerequisites

❑ To update ECOs, the Engineering Change Orders: Update security function must be included as part of the responsibility.

▶ **To define Engineering Change Orders:**

1. Navigate to the Engineering Change Orders window.

2. Create the ECO. See: Creating an ECO: page 2 – 23.

3. Assign an ECO approval list and status. See: Viewing ECO Approval Status: page 2 – 26.

4. Define implementation costs. See: Defining Implementation Costs: page 2 – 31.

5. Define an ECO revision. See: Defining an ECO Revision: page 2 – 31.

6. Define revised items. See: Defining ECO Revised Items: page 2 – 32.

7. Review ECO scheduling. See: Viewing ECO Schedule History: page 2 – 35.

8. Review item revisions. See: Viewing Item Revisions: page 2 – 40.

9. Define revised components. See: Defining Revised Components: page 2 – 37.

10. Review substitute components and reference designators. See: Assigning or Deleting Substitute Components: page 2 – 40 and Assigning Reference Designators: page 2 – 41.

11. Optionally, attach files to ECOs. See: Attaching Files to ECOs: page 2 – 42.

12. Submit the ECO for approval or set approval status to Ready to Approve.

See Also

Rescheduling an ECO or Revised Items: page 2 – 28

Creating an ECO

An ECO's approval status must be Approved before the ECO can be implemented.

> **Note:** If the approval status is Approval Requested, you cannot modify the ECO. If the approval status is Approved and the ECO is modified, the approval status will be set back to Not Submitted for Approval.

When ECO types are defined, they can optionally be associated with a priority as they are being associated with an Oracle Workflow process. When creating the ECO, if the selected ECO type / priority combination matches a defined ECO type/priority combination, the associated workflow process defaults. The approval status is set to Not Submitted for Approval until the Submit button is chosen. If there is no match between entered values and existing ECO type / priority combinations, the approval status is set to Approved and you can enter an approval list.

Prerequisites

❑ Define at least one ECO type.

▶ **To create an ECO:**

1. Navigate to the Engineering Change Orders window.

2. Enter an alphanumeric ECO identifier. If you use ECO autonumbering, the next identifier is defaulted.

3. Enter or select an ECO type.

   You can only select ECO types that can revise engineering items and bills if the ENG: Engineering Item Change Order Access profile option is set to Yes. If the selected ECO type updates engineering and manufacturing items and bills, any new bills defined on the ECO are engineering bills.

4. Optionally, enter the requestor of the ECO.

5. Optionally, enter the ECO department responsible for the ECO.

This can be used to transition the ECO from one department to another, for example, from manufacturing engineering to operations. For new ECOs, the default is derived from the ENG: ECO Department profile option.

If you specify that each ECO must have an ECO department, that is, the ENG: Mandatory ECO Departments profile option is set to Yes, then you must specify a responsible department.

Access to ECOs by ECO department is as follows:

• You can only view and update ECOs with the same ECO department as your ENG: ECO Department profile option.

• If you do not have a value for the profile option ENG: ECO Department, you can query and update any ECO.

• Any user can query and update ECOs with no department reference.

6. Optionally, enter a reason for the engineering change.

7. Optionally, enter or select a priority for the ECO.

   Note: If the ECO type and the priority combination are associated with an Oracle Workflow process, you cannot use an approval list.

8. If a workflow process is not associated with the ECO, you can enter an approval list. If you do not enter an approval list, the ECO approval status defaults to Approved without any kind of approval process.

9. Choose the ECO Revisions button to define ECO revisions. See: Defining an ECO Revision: page 2 – 31.

10. Choose the Revised Items button to define revised items. See: Defining ECO Revised Items: page 2 – 32.

11. Select the ECO status from the Tools menu. See: ECO Statuses: page 2 – 58.

    If the ECO status is Implement or Cancelled, the date of either status change is displayed.

12. If a workflow process is associated with the ECO, choose the Submit button to start the process.

13. If a workflow process is associated with an ECO, choose the Approvals button to view the approval status of the ECO.

    If you are using an approval list, change the approval status to Ready to Approve. Doing so sends the Alert.

See Also

Viewing ECO Approval Status

If an approval list is used, the approval status can only be changed manually, pending formal approval from a list member.

If a workflow process is associated with the ECO (based on the ECO type / priority combination), the approval status is changed automatically.

If neither a list nor a process is used, you must manually select either Approved or Rejected.

▶ **To view approval dates:**

- Select View Dates from the Tools menu. The approval request date, the approved date (if applicable), and the days to approve are displayed for reference.

► **To view workflow approval status:**

1. Navigate to the Approval History window. Do this by choosing the Approvals button from the Engineering Change Orders window.

The process names and the submit dates are displayed for reference.

2. Choose the Status button to view the status of an ECO approval process.

See Also

ECO Approval Statuses: page 2 – 59

Workflow for ECO Approvals: page 2 – 11

Rescheduling an ECO or Revised Items

You can reschedule ECOs or ECO revised items unless their status is Cancelled or Implemented.

Attention: Rescheduling does not change the ECO or revised item status, only the dates.

Prerequisites

❑ To reschedule an ECO, the Engineering Change Orders: Reschedule security function must be included as part of the responsibility.

❑ The approval status must be set to Approved before the ECO or any revised items can be scheduled or rescheduled.

▶ **To reschedule an ECO or Revised Items:**

1. Choose Reschedule from the Tools menu from either the Engineering Change Orders window or the Revised Items window.

2. Do one of the following:

   • If you are rescheduling an ECO, select an effective date from the calendar.

   • If you are rescheduling revised items, select a use–up date.

3. Enter the requestor of the rescheduled ECO.

4. Choose OK to save your work.

   If you entered this window from the Engineering Change Orders window, choosing OK will reschedule all pending revised items (those with the status of Open, Hold, Schedule, or Release) for this ECO.

   If you entered this window from the Revised Items window, this will reschedule only the selected revised item.

See Also

Overview of Function Security, *Oracle Appliactions System Administrator's Guide*

Implementing Function Security, *Oracle Appliactions System Administrator's Guide*

Changing the ECO Status

You can change the ECO status and the ECO revised item's status to Open, Hold, Release, Schedule, Implement, or Cancel.

An ECO's approval status must be Approved before the ECO can be implemented.

The following table describes the conditions regarding Workflow under which the status can be changed:

Status	Without Workflow	With Workflow: Before Approval	With Workflow: After Approval	With Workflow: Approval in Process
Open	Yes	Yes	Yes	No
Hold	Yes	Yes	Yes	No
Released	Yes	Yes	Yes	No
Scheduled	Yes	No	No	No
Rescheduled	Yes	Yes	Yes	No
Cancel	Yes	Yes	Yes	No
Implement	Yes	No	Yes	No

Table 2 – 5

Prerequisites

❑ To change the ECO status, the appropriate security function(s) must be included as part of the responsibility.

▶ **To change the ECO status:**

1. Navigate to the Engineering Change Orders window.

2. From the Tools menu, choose the status (Open, Hold, Release, Schedule, Implement, or Cancel). See: ECO Statuses: page 2 – 58.

3. If you are cancelling the ECO, select the Cancel Comments pop list to enter comments.

4. Save your work.

See Also

Implementing ECOs: page 2 – 44

Starting the AutoImplement Manager: page 1 – 19

Cancelling ECOs and Revised Items: page 2 – 47

Engineering Profile Options and Security Functions: page 1 – 20

Defining Implementation Costs

Estimate the implementation costs to engineering and to manufacturing of the ECO. Oracle Engineering uses this information for reference purposes only.

▶ **To define manufacturing and engineering costs:**

1. Choose Enter Costs from the Tools menu.

2. Enter a cost for engineering

3. Enter a cost for manufacturing.

Defining an ECO Revision

▶ **To define an ECO revision:**

1. Navigate to the ECO Revisions window. Do this by choosing the ECO Revisions button from the Engineering Change Orders window.

2. Enter a revision for the ECO.

The date that you entered the ECO is displayed for reference.

3. Save your work.

Defining ECO Revised Items

Each ECO can list one or more revised items whose form, fit, or function needs revision.

Any revised item can have an associated bill of material. You can create a bill for a revised item (if one does not exist) by copying it from another bill or by adding components to it.

▶ **To define revised items:**

1. Navigate to the Revised Items window. Do this by choosing the Revised Items button from the Engineering Change Orders window.

2. Enter or select an item to change with this ECO.

   Note: You can create a bill for the item (if one does not exist) by choosing the Components button and adding components in the Revised Components window.

3. Optionally, enter an alternate for the item. You can create or update alternate bills using an ECO.

4. Optionally, enter a new revision for the revised item.

   This must be greater than or equal to the current revision. If you create or update an alternate bill of material, you cannot assign a new item revision.

   You must enter a new revision for the revised item if you set the ENG: Require Revised Item New Revision profile option to Yes.

5. Enter an effective date for the item and component changes.

   This date is used to implement the revised item and identify past due revised items.

   If you select a use–up date for this item and its components, a record is created that indicates that this revised item is based on the use–up date of the item. If the MRP planning process computes a new use–up date before this revised item is implemented, Engineering automatically sends an alert to the planner.

6. Choose a status for the ECO revised item from the Tools menu. See: ECO Revised Item Statuses: page 2 – 58.

   Note: You can set the revised item status to Hold, Released, Implemented, or Cancelled only if the ECO status is Open. Otherwise, the revised item status defaults from the ECO status.

   If the ECO has a Workflow process and the item or its components are changed, the revised item's status is changed from Scheduled to Open and the approval status is changed to Not Submitted for Approval.

7. Indicate whether the revised item is MRP Active, that included in the planning process. The default is No if the Status is Hold; Yes if the Status is Open, Release, or Schedule.

   If the ECO lists engineering changes and has an effective date in the future, you may want the planning process to consider those changes.

8. Open the Item Details tabbed region and view the description and the user–defined item type for that item.

9. Optionally, open the Dates tabbed region and enter the Early Effective date. This is the earliest date you can manually implement the revised item.

If applicable, the Cancelled date for the changes of the revised item and its components, or the Implemented date for the revised item is displayed.

The Implemented Immediately check box, if enabled, indicates the item was implemented manually from the Tools menu. If disabled, the item is scheduled for automatic implementation.

10. Open the Use Up Details tabbed region and do the following:

   • If not already selected, enter the item whose use–up date is tied to the revised item effective date. The use–up item can be the revised item itself or a component of the revised item.

   • View the use–up item associated with the use–up date selected as the effective date.

   • View the name of the MRP plan to use for determining item use–up dates.

11. Open the Work in Process tabbed region and indicate whether to update WIP requirements for unreleased jobs or schedules when the revised item is implemented.

12. Select a disposition for inventory and work in process inventory affected by the ECO. See: Disposition: page 2 – 59.

13. Open the Cancel Details tabbed region to view the cancellation date and cancel comments.

14. Choose the History button to view revised item effective date history and track schedule changes to the revised item. Choose the Revisions button to view item revisions. Choose the Components button to add, change, or disable components.

See Also

Viewing ECO Schedule History

View revised item effective date history and track schedule changes to revised items.

▶ **To view ECO schedule history:**

1. Navigate to the History window. Do this by choosing the History button from the Revised Items window.

A history of all previous effective dates and their entry date is listed for the revised item.

2. View the employee who initiated the change to the effective date and any comments describing the change to the effective date.

See Also

Engineering Change Order Detail Report: page 4 – 3

Defining Revised Components

Enter and update change information for a revised item's components.

▶ **To define revised components:**

1. Navigate to the Revised Components window. Do this by choosing the Components button from the Revised Items window.

2. Enter or select an action to take:

   Add: Add a component to the revised item's bill of material. If a bill does not already exist, adding components creates one.

   Change: Change usage information for the component of the revised item's bill.

   Disable: Disable the component from the revised item's bill.

3. Enter a component on the bill.

4. Do the following:

- If you are changing component information, enter the old operation sequence where the component is currently assigned.

- If you are changing the component's operation sequence, enter a new operation sequence (from the routing) for the component of the revised item. The default is 1 for components being added where no routing exists.

- Enter the item sequence of the item on the bill of material. The default is the next highest item sequence.

- Enter the component quantity used by this particular revised item. For components you are changing the default is the quantity used by the revised item, 0 for components you are deleting, and 1 for components you are adding.

- For components you are adding or changing, enter an inactive date for the revised component.

5. Review the item's description, revision, and whether it is an engineering item in the Item Details tabbed region.

6. Open the Component Details tabbed region and do the following:

- Enter the planning percent for optional components on model and option class bills, and all components on planning bills. Oracle Master Scheduling/MRP uses planning percentages for planning bill explosions. You can enter quantities over 100 percent to overplan. See: Planning Percent, *Oracle Bills of Material User's Guide.*

- Enter a component yield factor. You cannot enter component yield for an option class item or for any components of a planning bill. The default is 1, indicating 100% yield. See: Yield, *Oracle Bills of Material User's Guide.*

- Indicate whether to include the cost of this component in the cost of its parent item for the cost rollup.

- View the component item type and status.

7. Open the Material Control tabbed region and select a supply type, a subinventory, and a locator. See: Supply Type, *Oracle Bills of Material User's Guide* and Subinventory and Locator, *Oracle Bills of Material User's Guide.*

8. Open the Order Entry tabbed region and do the following:

- Indicate whether to Check ATP. See: Check ATP, *Oracle Bills of Material User's Guide.*

- Indicate whether the component is optional and mutually exclusive. See: Mutually Exclusive and Optional, *Oracle Bills of Material User's Guide.*

- For optional components, enter the minimum and maximum sales order quantities. See: Minimum and Maximum Quantities, *Oracle Bills of Material User's Guide.*

- Select a basis. See: Basis, *Oracle Bills of Material User's Guide.*

9. Open the Shipping tabbed region and indicate whether the component should be listed on shipping documents, required to ship, or required for revenue. See: Shipping Details, *Oracle Bills of Material User's Guide.*

10. If the component is cancelled, open the Cancel Details tabbed region. Once the component is cancelled, you can no longer update any information about the revised component on this ECO.

    Note: You can cancel revised components by choosing Cancel from the Tools menu.

11. Choose the Substitutes button to open the Substitute Components window. Choose the Designators button to open the Reference Designators window.

See Also

Assigning Reference Designators: page 2 – 41

Assigning or Deleting Substitute Components: page 2 – 40

Item and Operation Sequence, *Oracle Bills of Material User's Guide*

Effective Date Fields, *Oracle Bills of Material User's Guide*

Viewing Item Revisions

▶ **To view item revisions:**

1. Navigate to the Item Revisions window. Do this by choosing the Revisions button from the Revised Items window.

2. Review the displayed information:

   The revision, the effective date and time, the implementation date, the initiation date, and the ECO are displayed for information purposes.

Assigning or Deleting Substitute Components

Assign or delete suggested substitute items for the revised component. You can assign any number of substitute items to each bill component and you can assign the same substitute item to more than one component.

▶ **To assign or delete substitute components:**

1. Navigate to the Substitute Components window. Do this by choosing the Substitutes button from the Revised Components window.

2. Enter an action: add a substitute item to, or delete a substitute item from the revised component.

3. Enter or select a substitute item for the revised component. This must be a manufacturing item.

4. Enter the quantity of the substitute item needed to replace the full component quantity.

   This can differ from the bill usage quantity of the component. The default is the usage quantity of the component.

Assigning Reference Designators

▶ **To assign reference designators to the revised component:**

1. Navigate to the Reference Designators window. Do this by choosing the Designators button from the Revised Components window.

2. Indicate whether to relate component quantity to the number of reference designators.

   Off: Assign any number of reference designators to each component (the default). The number of reference designators is independent of the component quantity. With Quantity Related unchecked, if the usage quantity of the component is four, you could, for example, define six or more reference designators.

   On: Use one reference designator per usage of the component. The component usage quantity must be a positive integer in order for you to use this option. When the bill requires a quantity of four of a given component, you assign four reference designators to that component, one for each usage.

   The number of reference designators implemented for the revised component is displayed. This value is 0 until the ECO is implemented.

   Also, the total number of reference designators currently defined for the revised component is displayed.

3. Select an action: add to or delete a range of reference designators from the revised component.

    Engineering enables you to view a prefix, suffix, and number range to assign to a sequence of reference designators.

See Also

Creating Reference Designators, *Oracle Bills of Material User's Guide*

Attaching Files to ECOs

You can attach text and files, such as spreadsheets, graphics, and OLE objects to engineering change orders.

For example, an attached file may include comments, such as a graphical representation of the bill structure or detailed instructions.

▶ **To attach files to ECOs:**

■ From the Engineering Change Orders window, choose the Attachments icon.

See Also

Working With Attachments, *Oracle Applications User's Guide*

Mass Changing ECOs

You can define a mass change to add, delete, or replace a component, alter a component quantity or yield, or change other component information. You can mass change all using bills of material or choose a subset of bills by item range, item category, or item type.

Engineering lets you create an ECO based on your parent item and component criteria. A mass change ECO lists all using assemblies that meet your search criteria as revised items, and assigns all component changes as revised components. You can manage and implement each revised item, or the entire ECO, the same way you maintain revised items you manually assign to an ECO.

> **Note:** In Bills of Material, mass changes take place immediately. However, in Engineering, an ECO is created that must be implemented to take effect.

▶ **To mass change ECOs:**

■ Mass change the bills of material as needed. Be sure to set ECO options.

See Also

Mass Changing Bills of Material, *Oracle Bills of Material User's Guide*

Engineering Profile Options and Security Functions: page 1 – 20

Implementing ECOs

When you implement an ECO, each revised item's status is marked as "implemented"; you can no longer reschedule it. You can implement all revised items on an ECO, or implement each revised item on a different date. Engineering only lets you implement ECOs that do not have an approval status of Rejected, or do not have an ECO status of Hold or Cancelled. Once you implement an ECO or revised item, you can no longer make any revised item changes.

You can manually implement revised items on an ECO or you can automatically implement each revised item on its effective date. Engineering updates the actual implementation date for each revised item when it is implemented. When all of the revised items on an ECO have been implemented, the ECO is completely implemented and can be purged.

Engineering implements an ECO over time from the earliest revised item effective date to the latest revised item effective date. When you spread multiple changes across several ECOs, you should ensure that the effective date ranges for the ECOs do not overlap. For example, if you implement changes to a bill of material across many ECOs, you should make sure that the revised item effective dates do not overlap. If you implement one change using the current revision, you should implement all other changes to the current revision before you implement changes against future revisions.

> **Attention:** You must implement new revisions in ascending order. If you implement a later revision for an item on one ECO, Engineering ensures that you implement any subsequent revisions for the item in ascending order.

Manual Implementation

For an ECO, you can specify whether to implement all or specific revised items. Engineering immediately implements changes to the revised items you specify and updates all component effective dates to the current date, regardless of the revised item effective dates.

For example, if you manually implement a revised item that has a future effective date, Engineering changes the effective date to the current date and marks the revised item and all revised components as implemented.

Automatic Implementation

To AutoImplement a revised item on an ECO, you mark the revised item status as 'scheduled' and specify an effective date. You can schedule all revised items on an ECO for auto–implementation, or schedule each revised item individually. Engineering automatically implements scheduled changes on their effective dates.

Start the AutoImplement Manager process so Engineering implements scheduled changes daily.

Prerequisites

❑ To implement an ECO, the Engineering Change Orders: Implement security function must be included as part of the responsibility.

▶ **To manually implement an ECO:**

1. Navigate to the Engineering Change Orders window.

2. Enter or select an ECO to implement.

3. Choose Implement from the Tools menu. Doing so automatically changes the status of all revised items.

▶ **To manually implement a revised item on an ECO:**

1. Navigate to the Revised Items window.

2. Select a revised item to implement.

3. Choose Implement from the Tools menu.

   Note: A warning message appears if the ECO does not have a Workflow process and the revised item's effective date is in the future.

▶ **To automatically implement an ECO:**

1. Navigate to the Engineering Change Order window.

2. Enter or select an ECO to implement.

3. Set the ECOs status and/or the status of revised items to Scheduled.

4. Save your work.

5. Start the AutoImplement Manager.

See Also

Cancelling ECOs and Revised Items

You can cancel an entire ECO, a revised item on an ECO, or the individual revised components on an ECO before it is implemented. When you cancel an ECO, you can enter comments that explain the reason for cancellation.

Cancelling an entire ECO cancels all the revised item changes and the changes to their associated revised components. Cancelling a specific revised item cancels only the changes that affect that item and its revised components. Once you cancel an ECO you cannot update it, but you can view a cancelled ECO.

Cancelling a revised component only affects that revised component for that revised item. The cancelled component can be viewed in the Cancellation tabbed region.

Prerequisites

❑ To cancel an ECO, the Engineering Change Orders: Cancel security function must be included as part of the responsibility.

▶ **To cancel the entire Engineering Change Order:**

1. Navigate to the Engineering Change Order window.

2. Find the ECO to cancel.

3. Choose Cancel from the Tools menu.

4. Save your work.

   • Cancel the ECO, its revised items, and the associated revised components by choosing Cancel from the Tools menu.

   • Cancel a revised item by choosing the Revised Items button on the Engineering Change Orders window, and choosing Cancel from the Tools menu.

   • Cancel a revised component by choosing the Components button from the Revised Items window and choosing Cancel from the Tools menu.

5. Save your work.

▶ **To cancel an ECO's revised items:**

1. Navigate to the Engineering Change Order window.

2. Find the ECO containing revised items to cancel.

3. Choose the Revised Items button.

4. Select the revised items to cancel.

5. Choose Cancel from the Tools menu.

6. Save your work.

▶ **To cancel components of a revised item:**

1. Navigate to the Engineering Change Order window.

2. Find the ECO containing components of revised items to cancel.

3. Choose the Revised Items button.

4. Select the revised item containing components to cancel.

5. Choose the Components button.

6. Select the components to cancel.

7. Choose Cancel from the Tools menu.

8. Save your work.

See Also

Creating an ECO: page 2 – 23

Material Requirements Planning, *Oracle Master Scheduling/MRP User's Guide*

Engineering Profile Options and Security Functions: page 1 – 20

Viewing ECO Schedules

View ECO information, including scheduling information, pending and implemented ECOs, approval status, revised item status, and so on.

▶ **To view ECO schedules:**

1. Navigate to the View ECOs folder window.

2. Enter search criteria in the Find ECOs window

3. Select how to sort ECOs—by ECO identifier then effective date, or by effective date then ECO identifier.

4. Optionally, enter revised item information:

   • an effective date range

   • a revised item

   • a revised component

   • whether to query for revised item status, and if so, any combination of revised item statuses.

5. Choose the Find button to find ECOs based on your search criteria.

   This opens the View ECOs folder window which has three tabbed regions, each containing specific ECO information: Revised Items, ECO Details, and Use Up.

6. Choose the New and Open buttons to navigate to the Engineering Change Orders window. Using the New button enables you to create a new ECO; using the Open button enables you to view an existing ECO.

See Also

Using Query Find, *Oracle Applications User's Guide*

Using Query Operators, *Oracle Applications User's Guide*

Searching For Information, *Oracle Applications User's Guide*

Performing Query-by-Example and Query Count, *Oracle Applications User's Guide*

Defining Engineering Change Orders: page 2 – 22

Customizing the Presentation of Data in a Folder, *Oracle Applications User's Guide*

Engineering Change Order Schedule Report: page 4 – 6

Use Up ECOs

Oracle Master Scheduling/MRP automatically computes and stores the use-up date for each item it plans on each MRP plan. The use-up date is the date when on-hand quantity is exhausted based on projected gross requirements. It calculates the use-up date by applying any on-hand quantity in inventory (supply) against any gross requirements (demand). When calculating the date, it does not consider scheduled receipts or repetitive schedules as supply.

Revised Item Effective Dates Linked to Use-Up Dates

When you define a revised item on an ECO, you can base the revised item effective date on the use-up date of another item.

When you define a revised item on an ECO, you can select the use-up date for all components of the revised item and the use-up date of the revised item itself for all MRP plans that include those items. Doing so will default the plan name and use-up item. The revised item effective date is now linked to a use-up date.

Alternatively, for a revised item, you can select a use-up item, which can be any component of the revised item or the revised item itself. But since the plan name is not specified, the revised item effective date is *not* linked to a use-up date.

Use-Up Alerts

Engineering uses Oracle Alert to automatically notify planners whenever the MRP planning process computes a new use-up date for an item if it is a use-up item for an ECO revised item. For example, if revised item A specifies item B as its use-up item (so the revised item effective date for A equals B's use-up date), then if the MRP planning process computes a different use-up date for B, Oracle Alert notifies the planner for A that B's use-up date no longer equals the revised item effective date for A.

See Also

Material Planning Logic, *Oracle Master Scheduling/MRP User's Guide*

Reviewing the Horizontal Plan, *Oracle Master Scheduling/MRP User's Guide*

MRP Planning for ECOs

Oracle Master Scheduling/MRP lets you consider unimplemented ECOs when you plan material requirements and considers use–up date changes in some cases.

Unimplemented ECO Revised Items Planning

When you define an ECO, specify whether the MRP planning process should plan for an ECO revised item. This lets you order material and plan resources that you need to build a future revision in advance. When the MRP planning process explodes requirements for a planned order based on a planned order start date, it generates requirements considering component changes introduced on ECO revised items so specified.

Use–up ECOs Planning

The planning process automatically changes revised item effective dates and considers those new effective dates in the current MRP plan *only* when the use–up date changes and the revised item is the use–up item. The planning process then uses the updated effective date for component changes when it explodes requirements for planned orders.

See Also

Material Requirements Planning, *Oracle Master Scheduling/MRP User's Guide*

Unreleased Item Revisions in Oracle Work in Process

In Work in Process, you can open discrete jobs or schedules considering pending engineering changes. Each user can define a job with released, scheduled, and implemented engineering changes, but you can control whether a user or a responsibility can define a job considering unreleased engineering changes.

If you set the WIP: Exclude Open ECOs profile option to Yes, Work in Process sees the effects of *only* released, scheduled, and implemented ECO revised items when you choose a revision or revision date and when Work in Process explodes the bill of material. Work in Process also considers open (unreleased) ECOs if you set this profile option to No.

See Also

Overview of Discrete Manufacturing, *Oracle Work in Process User's Guide*

Overview of Repetitive Manufacturing, *Oracle Work in Process User's Guide*

Implementation of ECOs on Jobs and Schedules

You can indicate whether to update work in process requirements when you implement an ECO revised item. When you implement the revised item that is set to update work in process, the bill of material is automatically re-exploded and updated for all unreleased discrete jobs and repetitive schedules for the item.

If you have updated component material requirements for the unreleased job or schedule, you lose these updates after you implement the revised item.

Released, Complete, and On hold Repetitive Schedules

For repetitive schedules, if you have not moved assemblies beyond the Queue intraoperation step of the first operation, Work in Process automatically regenerates the bill and component requirements for the repetitive schedule to include the effects of the ECO.

If you have moved assemblies beyond the Queue intraoperation step of the first operation, when you implement the ECO, Work in Process splits the schedule into two schedules that take the place of the original

schedule. The first schedule uses the original bill and the second new schedule uses the revised bill that includes any revised item or component changes. Work in Process assigns the two new schedules a status of Released, Complete, or On hold, depending on the status of the original schedule.

The schedule splits based on the number of assemblies in process (moved past the Queue intraoperation step of the first operation if you are using routings) on the original routing. That number is rounded up to the nearest day so that you can finish your day's work using the original bill. The next day production starts using the revised bill and a new schedule.
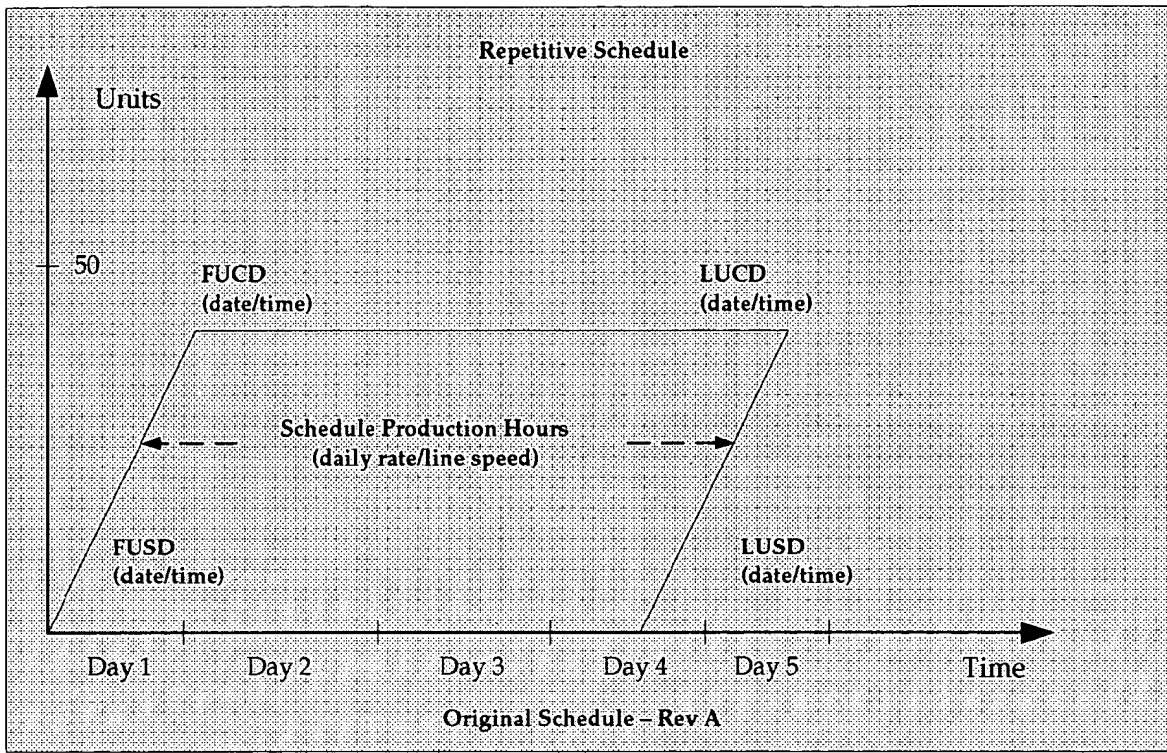
The following example best illustrates this procedure.

Example

Released Schedule:

- Production rate = 50 per day
- Process days = 4 days
- Total quantity of schedule = 200 units
- Throughput = 1 day

The following diagram illustrates the original schedule:

Original Schedule – Rev A

Shop floor distribution of assemblies before the implementation of the ECO for the original schedule:

- 80 units spread in the routing beyond queue of the first operation
- 120 units in queue of the first operation

Original schedule dates:

- First unit start date = Day 1
- First unit complete date = Day 2
- Last unit start date = Day 4
- Last unit complete date = Day 5

Since the daily quantity is 50, this means that production is in its second day. Therefore, if you implement the ECO now, the schedule splits after the second day's work is completed.

If you implement a change order for the item on Day 3 (Today), the shop floor distribution of assemblies following the implementation of the ECO are:

New Schedule 1 = 100 total units

- 20 units in queue of the first operation
- 80 units spread in the routing beyond queue of the first operation. These 80 units are located exactly where they were before the implementation of the ECO.

New Schedule 2 = 100 total units

- 100 units in queue of the first operation. The reason that there are only 100 assemblies and not 120 assemblies is that only two process days remain in the schedule; therefore, only two process days worth of assemblies can be put into new schedule 2.

Schedule dates following the implementation of the ECO:

New Schedule 1:

- First unit start date = Day 1
- First unit complete date = Day 2
- Last unit start date = Day 2
- Last unit complete date = Day 3

New Schedule 2:

- First unit start date = Day 3
- First unit complete date = Day 4
- Last unit start date = Day 4
- Last unit complete date = Day 5

The following diagram illustrates the split schedule:
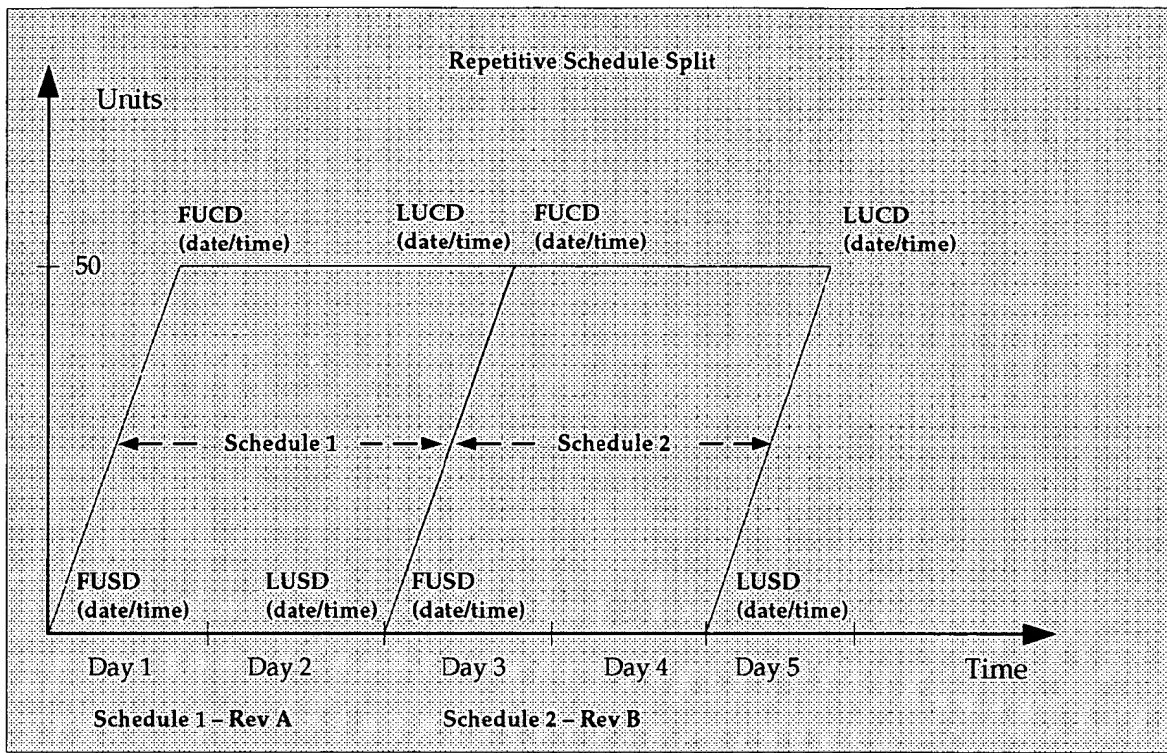
All material that you issued to the original schedule remains with new schedule 1. Material requirements for new schedule 1 are changed to match the new number of assemblies to complete. Material requirements for the altered assembly are exploded for new schedule 2 for the number of assemblies assigned to the new schedule 2.

See Also

Overview of Discrete Manufacturing, *Oracle Work in Process User's Guide*

Overview of Repetitive Manufacturing, *Oracle Work in Process User's Guide*

Purging ECOs

You can purge fully implemented engineering change information from the database. You can choose a range of ECOs and a date. Engineering purges all fully implemented or cancelled ECOs on or before that date.

When you purge ECOs, Engineering removes all implemented and cancelled ECOs as of that date from the database, along with all related information (except for the revision history of the bill itself). You cannot view or report ECO information once you purge it.

▶ **To purge an ECO:**

1. Navigate to the Purge Engineering Change Order window. See: Submitting a Request, *Oracle Applications User's Guide.*

2. Enter a range of ECOs to purge.

3. Indicate whether to purge implemented ECOs.

4. Indicate whether to purge cancelled ECOs.

5. Enter a date on or before which all implemented and/or cancelled ECOs are purged.

Engineering Change Orders Field Reference

This section describes the use of certain major fields.

ECO Statuses

Whenever this status is updated, the status of all revised items is also updated.

Open	The ECO is not complete; you can still make changes. MRP Active is defaulted to on.
Hold	The ECO cannot be implemented. The status of all pending revised items is set to Hold. MRP Active defaults to off.
Release	The entire ECO is released from the currently responsible ECO department. The status of all pending revised items is set to Released. MRP Active defaults to on.
Schedule	The ECO is scheduled for auto–implementation. An ECO can only have this status if the approval status is Approved. MRP Active defaults to on.
Implement	The ECO is implemented manually. You can no longer make changes to an implemented ECO.
Cancel	No more changes allowed. All unimplemented revised items are cancelled.

ECO Revised Item Statuses

These statuses are updated by changes to the ECO status.

Open	Changes to the revised item are still in process or not complete. The MRP active attribute will be updated to Yes. This is the default.
Hold	Changes to the revised item are on hold; you cannot implement them.
Release	Changes to the revised item have been released and can be implemented manually. The revised item has not been scheduled for auto–implementation.

Schedule	The revised item is scheduled for auto–implementation. You can only set the revised item to Schedule if the ECO status is Approved. The MRP active attribute is updated to on.
Implement	The revised item has been implemented manually or automatically. You cannot list additional changes for implemented revised items.
Cancel	The revised item has been cancelled.

ECO Approval Statuses

If you do not tie an Oracle Workflow process to the ECO, the only valid approval status is No Approval Needed.

Not Submitted for Approval	The ECO has not been submitted to the Workflow approval process.
Approval Requested	Engineering has started the Workflow process.
Rejected	Cannot schedule or implement the ECO or any revised items.
Approved	Approved for release, to schedule, or to implement.
Processing Error	Indicates that an error occurred while Workflow was processing the ECO approval.

Disposition Field

These values describe the disposition of inventory and work in process inventory affected by an engineering change order (ECO).

No change required	The ECO does not affect the revised item in WIP and inventory. This is the default.
Scrap WIP and inventory	Scrap the revised item in WIP and inventory when you implement the revised item.
Scrap only inventory	Scrap the revised item only in inventory when you implement the revised item.
Scrap only WIP	Scrap the revised item only in WIP when you implement the revised item.

Rework inventory and WIP	Rework the revised item in WIP and inventory when you implement the revised item.
Rework only inventory	Rework the revised item only in inventory when you implement the revised item.
Rework only WIP	Rework the revised item only in WIP when you implement the revised item.
Exhaust WIP and inventory	Use the revised item until you exhaust WIP and inventory for the item.
Exhaust only WIP	Use the revised item until you exhaust WIP for the item.
Exhaust on serial number	Use the revised item until it reaches a particular serial number.

Engineering Prototypes

T his chapter tells you everything you need to know about using engineering prototypes, including:

- Overview of Engineering Prototype Environment: page 3 – 2
- Engineering Bills of Material and Routings: page 3 – 5
- ECOs on Engineering Items and Bills: page 3 – 6
- Transferring or Copying Engineering Items, Bills, and Routings: page 3 – 8

Overview of Engineering Prototype Environment

Oracle Engineering enables you to move toward concurrent engineering by integrating engineering prototype data with manufacturing data. Each department that accesses engineering item information can perform the same functions on prototypes as all departments do for manufactured assemblies. With engineering item information, you can separate released product designs, controlled distribution products, and alternate manufacturing methods for existing products from your manufacturing data.

Engineering enables you to create engineering items, bills of material and routings the same way you define manufacturing item information.

> Note: This does not apply to Product Families. See:

Each item defined in Engineering is assigned to engineering. You can define engineering items and assign item attribute details as you do for manufacturing items. You can perform any function with an engineering item that you do for a manufacturing item, including:

- revision control
- track inventory
- value inventory transactions
- rollup costs
- update frozen standard costs
- plan in MPS and MRP
- sell on customer orders
- purchase on purchase orders
- build in WIP and issue to a WIP job

Item Catalog for Group Technology

When you design new products, search for existing items that meet your requirements before you define a new engineering item. Doing so can help prevent duplicate items. When you define an engineering or manufacturing item, you can classify the item by any number of characteristics.

For example, you can catalog manufacturing items and engineering items by three descriptive elements—*form, fit,* and *function.* Before you create a new engineering item, search the item catalog for all items that

match any combination of these elements, such as "heated plastic" and "fastener". You can further restrict your search with other item details, including organization, item type, item category, and item status. If an item that meets your search criteria does not exist, you can create a new engineering item and assign the values of "heated plastic" to *form* and "fastener" to *function*. See: Overview of Item Catalogs, *Oracle Inventory User's Guide.*

Engineering Item Status

You can define item statuses for each phase of your product life cycle. Engineering enables you to control engineering item attribute information by item status, so you can manage the introduction of new products. For example, you may define an item status "Design Released" and assign this status to all engineering product designs released from Design Engineering to your organization. You can control a "Design Released" item so that it cannot be built, purchased, or sold. As your product design matures, you can assign an item status of "Alpha" to your item so you can build or purchase it, but not include it on customer orders. After the product design and process stabilize, you may assign a "Beta" item status to your item so you can build, purchase, and sell the item in small quantities. See: Defining Item Status Codes, *Oracle Inventory User's Guide.*

Engineering Item Costing

You can specify item costs, roll up costs, and update frozen standard costs for engineering items. When you assign item costs, you can specify cost elements, sub–elements, activities, basis and rates, the same way you assign costs for manufacturing items. Oracle Cost Management lets you roll up and update manufacturing and engineering item costs by item, category, or across all items. After you assign, roll up, and update item costs, you can review cost information for all cost types available to engineering. You can restrict access to item cost details in Engineering by cost type.

Engineering Item Purchasing

For each engineering item you define, you can enable the item for use in Oracle Purchasing. To include engineering items on your purchase orders and requisitions, you can assign default buyer, supplier, price tolerance, and account information the same way you assign purchasing details to manufacturing items. You can receive, return, or adjust engineering items the same way you receive manufacturing

items on purchase orders. For costed engineering items, you can track purchase price and compute purchase price variance the same way you cost other purchased items. With item status control, Engineering also enables you to control purchasing functions at any point in an engineering item's life cycle.

Engineering Item Planning

Engineering enables you to plan engineering items in Oracle Master Scheduling/MRP the same way you plan manufacturing items. When you define an engineering item, you can assign a MPS/MRP planning method, planning time fence, shrinkage rate, and other planning details. In Master Scheduling/MRP, you can forecast engineering items and manufacturing items, load forecast details, and consume forecasts with existing sales orders. Master Scheduling/MRP computes material requirements for engineering and manufacturing items using the master schedule, engineering or manufacturing bills of material, scheduled receipts, and inventory information. You can also control planning functions for engineering items by item status to track an engineering item's life cycle. See: Overview of Forecasting, *Oracle Master Scheduling/MRP User's Guide* and Two–Level Master Scheduling, *Oracle Master Scheduling/MRP User's Guide.*

Discrete Jobs for Engineering Items

When you define an engineering item, you can enable the item for use in Oracle Work in Process. To build an engineering assembly or prototype a new process, you define a discrete job using an engineering bill of material or routing. You can issue engineering and manufacturing items to jobs, as well as collect resource, material, and overhead costs based on an engineering routing. You can place finished engineering assemblies into inventory the same way you place manufacturing assemblies into inventory. To track an engineering item's life cycle, you can update item status and control when to build an engineering item or prototype a new process in Work in Process.

Item Types and Bill of Material Types

Each item can be identified as an engineering item and enabled for use in Engineering using two item master attributes, Engineering Item and BOM Item Type. The BOM Allowed item attribute must also be set to Yes.

The Engineering Item attribute indicates whether the item exists in engineering. If not, it is a manufacturing item. This attribute is not updatable when defining the engineering item. When an item is transferred to manufacturing, the Engineering Item attribute is disabled.

You can enable any item for use in Engineering when you assign one of the following four values for the BOM Item Type item attribute: standard, model, option class, or planning.

You can define an engineering item and an engineering bill of material for a manufacturing item enabled in Oracle Bills of Material, but you cannot define manufacturing bills of material for engineering items.

See Also

Overview of Bills of Material, *Oracle Bills of Material User's Guide*

Bill of Material Types, *Oracle Bills of Material User's Guide*

Creating a Bill of Material, *Oracle Bills of Material User's Guide*

Overview of Routings, *Oracle Bills of Material User's Guide*

Creating a Routing, *Oracle Bills of Material User's Guide*

Access Control by Item Type, *Oracle Bills of Material User's Guide*

Deleting Items, Bills, Routings, Components, and Operations, *Oracle Bills of Material User's Guide*

Creating Custom Deletion Constraints, *Oracle Bills of Material User's Guide*

Defining Items, *Oracle Inventory User's Guide*

Engineering Bills of Material and Routings

You can define an engineering bill of material or routing as alternates for a manufacturing bill or routing. This enables you to prototype variations from the primary bill of material that produce the same assembly.

You can specify a list of item catalog descriptive elements for model and option class engineering bills. After you release the engineering bill to manufacturing and take customer orders for specific configurations, Bills of Material creates the new configuration item and automatically assigns values to each catalog descriptive element.

Engineering lets you assign manufacturing and engineering items as components to the engineering bill of material.

Each routing you define can exist either in engineering or in manufacturing, and both engineering and manufacturing routings share the same resource, department, and standard operation information.

You can calculate manufacturing and cumulative lead times for engineering items.

See Also

Overview of Bills of Material, *Oracle Bills of Material User's Guide*

Creating a Bill of Material, *Oracle Bills of Material User's Guide*

Primary and Alternate Bills of Material, *Oracle Bills of Material User's Guide*

Overview of Routings, *Oracle Bills of Material User's Guide*

Creating a Routing, *Oracle Bills of Material User's Guide*

Assigning Descriptive Elements, *Oracle Bills of Material User's Guide*

Lead Time Management, *Oracle Bills of Material User's Guide*

ECOs on Engineering Items and Bills

Engineering enables you to define engineering change orders (ECOs) for manufacturing and engineering items. You can also mass change engineering bills of material the same way you manage mass changes to manufacturing bills of material.

ECO Types

Engineering controls the access to ECOs and the changes you can specify on an ECO. For each ECO type, you can specify if ECOs of this type can update engineering items. Only users whose profile option indicates they can update engineering items can choose ECO types that update engineering item information. If you define a new bill of material using an ECO with an ECO type that updates engineering items, Engineering creates the bill as an engineering bill when you implement the ECO.

Profile Options

Engineering uses the following four profile options to control the types of items you can change on an ECO:

- ENG: Engineering Item Change Order Access (engineering items)
- ENG: Model Item Change Order Access (model and option class items)
- ENG: Planning Item Change Order Access (planning items)
- ENG: Standard Item Change Order Access (standard items)

See Also

Creating an ECO: page 2 – 23

Defining ECO Types: page 1 – 9

Engineering Profile Options and Security Functions: page 1 – 20

Transferring or Copying Engineering Items, Bills, and Routings

You must transfer an engineering item prior to, or simultaneously with, its engineering bill of material and/or routing. When copying items, bills, and routings, all information must be copied simultaneously.

> Note: Engineering does not transfer or copy an item, bill, or routing if it already exists in manufacturing. Also, information transferred to manufacturing is still available to engineering; it is not copied.

> Transferring and copying engineering data is organization specific. That is, you can only transfer or copy an engineering item, bill, or routing to manufacturing within the same organization.

Engineering Items

All information associated with the engineering item is transferred (or copied).

If you copy an engineering item, you must provide a new name and description. The original item information is retained in engineering.

When you transfer an engineering item assigned to a category set different from the inventory category set, Engineering automatically assigns the new manufacturing item to the inventory category set. Engineering also enables you to assign a new item revision and lets you reference an ECO when you transfer an engineering item.

Engineering Bills of Material

All bill information—including all engineering item components on a single level bill for an item is transferred (or copied). For multiple levels of engineering item components, you must transfer each engineering bill level by level, starting from the lowest level.

You can assign a new item revision and reference an ECO when you transfer an engineering bill of material. When you transfer an engineering bill of material, you can specify whether to transfer all components, current effective components, or current and future effective components. You can also specify whether to transfer pending component information from an ECO.

With this transfer criteria, Engineering transfers all engineering items that meet your criteria and that are components on the single level bill of material. For bills of material that reference a common engineering bill, you must transfer the common bill to manufacturing before you transfer any engineering bills that reference the common bill.

Engineering Routings

When you transfer a bill of material without transferring the engineering routing, all components on the manufacturing bill report to the operation sequence 1, regardless of the operations on the engineering routing. If components of the bill of material overlap (the same component item appears twice) at operation sequence one, Engineering does not transfer the engineering bill of material until you also transfer the engineering routing. If you transfer the engineering bill of material and routing simultaneously, components on the manufacturing bill report to the appropriate operation on the manufacturing routing.

When you transfer a routing, you can also specify a new routing revision and reference an ECO. Engineering transfers all operations, current effective operations, or future effective operations depending on your transfer criteria. For routings that reference a common engineering routing, you must transfer the common routing to manufacturing before you transfer any engineering routings that reference the common routing.

Prerequisites

❑ You can only transfer (or copy) standard, model, option class, or planning items, bills, or routings if you have access to them. See: Engineering Profile Options and Security Functions: page 1 – 20.

▶ **To transfer or copy engineering items data to manufacturing:**

1. Navigate to the Transfer to Manufacturing window.

2. Enter an item and indicate whether to transfer (or copy) item, bill, and routing data (if applicable).

   Note: When copying an engineering bill to manufacturing, you must copy the item simultaneously with its bill and/or routing.

3. Optionally, enter a new item or routing revision (if applicable).

The revision must be higher than the current revision (as shown) and can be alphanumeric.

4. Optionally, open the Alternates tabbed region and for Selection, select Specific to transfer (or copy) a specific alternate, select Primary to transfer the primary alternate, or select All to transfer all alternates.

   Leaving this blank will transfer (or copy) the primary and all alternates (if any).

   To transfer (or copy) a specific alternate, you must enter its name.

5. Open the ECO, Description tabbed region and enter an ECO. This is for informational purposes only.

6. If you are copying data, you must open the Manufacturing Items tabbed region and enter a new item name and description.

7. If you are transferring (or copying) bills, indicate if only implemented components should be transferred.

8. Select whether to transfer (or copy) All past, Current (effective on the specified revision date), or Future components and/or operation steps associated with the assembly. The default is Current.

   If you select Current or Future and Current, enter an effective date.

9. Choose the Transfer (or Copy) button.

See Also

Copying Bill and Routing Information, *Oracle Bills of Material User's Guide*

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4

Reports

T his chapter describes Oracle Engineering reports. Each description includes a sample report, with a description of submission parameters.

Engineering Change Order Approval Lists Report

This report lists the approvers for engineering change orders (ECOs). When you change the approval status of an ECO to Ready to Approve, Oracle Alert automatically sends an alert to each approver on the list indicating that an ECO awaits their approval.

Report Submission

In the Submit Requests window, select Engineering Change Order Approval Lists Report in the Name field.

Report Parameters

Approval List Names From/To

To restrict the report to a range of approval list names, select beginning and ending approval list names.

See Also

Submitting a Request, *Oracle Applications User's Guide*

Engineering Change Order Detail Report

This report contains current or historical engineering change order (ECO) information. You can sort the report by engineering change notice or creation date. You can report all changes, current pending changes, or historical changes. You can run the report for all engineering change notices or for a range.

Report Submission

In the Submit Requests window, select Engineering Change Order Detail Report in the Name field.

Report Parameters

Engineering Change Orders From/To

To restrict the report to a range of engineering change orders, select the beginning and ending engineering change orders.

Dates From/To

To restrict the report to a range of dates, select the beginning and ending dates.

Status

Enter Open, Hold, Scheduled, Cancelled, Implemented, or Released to indicate the status of the ECO to print. See: ECO Statuses: page 2 – 58.

Additional Component Detail

Enter Yes or No to indicate whether to print ECO component detail.

Order Entry Component Detail

Enter Yes or No to indicate whether to print ECO order entry component detail.

See Also

Submitting a Request, *Oracle Applications User's Guide*

Engineering Change Order Priorities Report

This report lists engineering change order (ECO) priorities that you defined for Oracle Engineering. ECO priorities enable you to specify the urgency of your ECO. Engineering uses ECO priorities for reference only.

Report Submission

In the Submit Requests window, select Engineering Change Order Priorities Report in the Name field.

See Also

Submitting a Request, *Oracle Applications User's Guide*

Engineering Change Order Reasons Report

This report lists the engineering change order (ECO) reasons that you defined for Oracle Engineering. You can use engineering change reasons to categorize your ECOs. Engineering uses ECO reasons for reference only.

Report Submission

In the Submit Requests window, select Engineering Change Order Reasons Report in the Name field.

See Also

Submitting a Request, *Oracle Applications User's Guide*

Engineering Change Order Schedule Report

This report lists pending engineering change order (ECO) schedule information up to a specified date. You can run the report for all ECOs or for a range.

Report Submission

In the Submit Requests window, select Engineering Change Order Schedule Report in the Name field.

Report Parameters

Print Components

Enter either Yes or No to indicate whether you want to print revised components associated with the revised item.

Engineering Change Order Type

Enter an engineering change order type to print engineering change orders associated with it.

Engineering Change Orders From/To

To restrict the report to a range of Engineering Change Orders, select the beginning and ending Engineering Change Orders.

Effective Dates From/To

To restrict the report to a range of dates, select the beginning and ending dates.

Revised Item Status

Enter Open, Hold, Scheduled, Cancelled, Implemented, or Released to indicate the status of the revised item to print.

Display Option

Choose one of the following options:

All   Report the pending and implemented engineering change orders.

Historical changes	Report the implemented engineering change orders.
Pending changes	Report the current engineering change orders. Oracle Engineering displays this option as the default.

Revised Item

Enter a revised item to print.

Revised Component

Enter a revised component to print.

Sort Criteria 1

Choose one of the following options. The report sorts ECOs first in this order, then in the specified order for Sort Criteria 2 and Sort Criteria 3.

ECO	Sort ECOs first by ECO. Oracle Engineering displays this option as the default.
Effective date	Sort ECOs first by effective date.
Item number	Sort ECOs first by item number.

Sort Criteria 2

Choose one of the following options. Engineering sorts the ECOs by the first sort type and then by this sort type within the first type.

ECO	Sort ECOs by ECO.
Effective date	Sort ECOs by effective date.
Item number	Sort ECOs by item number. Oracle Engineering displays this option as the default.

Sort Criteria 3

Choose one of the following options. Engineering sorts the ECOs by the first sort type, then by the second sort type within the first type, and finally by this sort type within the second type.

ECO Sort ECOs by ECO.

Effective date Sort ECOs by effective date. Oracle Engineering displays this option as the default.

Item number Sort ECOs by item number.

See Also

Submitting a Request, *Oracle Applications User's Guide*

Engineering Change Order Types Report

This report lists the change orders types that determine the types of items and bills of material you can modify on engineering and mass change orders.

Report Submission

In the Submit Requests window, select Engineering Change Order Types Report in the Name field.

See Also

Submitting a Request, *Oracle Applications User's Guide*

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A

Windows and Navigator Paths

T his appendix shows you the default navigator path for each Oracle Engineering window. Refer to this appendix when you do not already know the navigator path for a window you want to use.

Engineering Windows and Navigator Paths

For windows described in other manuals:

See...	Refer to this manual for a complete window description.
BOM	*Oracle Bills of Material User's Guide*
CAP	*Oracle Capacity User's Guide*
CST	*Oracle Cost Management User's Guide*
Flex	*Oracle Applications Flexfields Manual*
GL	*Oracle General Ledger User's Guide*
HR	*Oracle Human Resources User's Guide*
PO	*Oracle Purchasing User's Guide*
MRP	*Oracle Master Scheduling/MRP User's Guide*
SYS	*Oracle System Administrator's Guide*
User	*Oracle Applications User's Guide*

Text in brackets ([ ]) indicates a button.

Engineering Responsibility	
Window Name	**Navigation Path**
Approval History: page 2 – 26	ECOs > ECOs > [Approvals]
Approval Dates: page 2 – 26	ECOs > ECOs > [Special] > View Dates
Approval Lists: page 1 – 17	Setup > Approval Lists
Assign Cross Reference Types (See **INV**)	Prototypes > Items > Cross References > [Assign]
Bill Components Comparison (See **BOM**)	Prototypes > Bills > Comparison
Bill Details (See **BOM**)	Prototypes > Bills > Bills > [Bill Details

Engineering Responsibility	
Bill Documents (See BOM)	Prototypes > Bills > Documents
Bills of Material (See BOM)	Prototypes > Bills > Bills
Calculate Lead Times (See BOM)	Prototypes > Routings > Lead Times
Change Types: page 1 – 9	Setup > Change Types
Change Type Processes: page 1 – 9	Setup > Change Types > [Processes]
Component Changes: page 2 – 43	ECOs > Mass Changes > [Changes]
Component Changes (See BOM)	Prototypes > Bills > Mass Changes > [Changes]
Copy to Manufacturing: page 3 – 8	Copy to Manufacturing
Cross Reference Types (See INV)	Prototypes > Items > Cross References
Deletion Constraints (See BOM)	Setup > Delete Constraints
Departments (See BOM)	Prototypes > Routings > Departments
Descriptive Elements (See BOM)	Prototypes > Bills > Bills > [Elements]
ECO Autonumbering: page 1 – 11	Setup > AutoNumbering
ECO Department (See HR)	Setup > ECO Department
ECO Priorities: page 1 – 14	Setup > Priorities
Engineering Change Orders: page 2 – 22	ECOs > ECOs ECOs > Schedules
Engineering Master Item (See INV)	Prototypes > Items > Master Items
Engineering Organization Item (See INV)	Prototypes > Items > Organization Items

Engineering Responsibility	
Enter Person (See **HR**)	Setup > Employees
History: page 2 – 35	ECOs > ECOs > [Revised Items] > [History]
Import Bills and Routings (See **BOM**)	Prototypes > Bills > Import
Indented Bill of Material (See **BOM**)	Prototypes > Bills > Indented Bills
Item Attributes (See **INV**)	Prototypes > Items > View Item Details > [Attributes]
Item Catalog Groups (See **INV**)	Prototypes > Items > Catalog Groups
Item Documents (See **User**)	Prototypes > Items > Documents
Item Relationships (See **INV**)	Prototypes > Items > Related Items > [Find]
Item Revisions: page 2 – 40	ECOs > ECOs > [Revised Items] > [Revisions]
Item Revisions (See **BOM**	Prototypes > Bills > Bills > [Revision]
Item Search (See **INV**)	Prototypes > Items > Item Search > [Find]
Item Template (See **INV**)	Prototypes > Items > Item Template > [Find] > Item Templates Summary > [Open]
Item WhereUsed (See **BOM**)	Prototypes > Bills > Item WhereUsed
Mass Change Bills: page 2 – 43	ECOs > Mass Changes
Operation Resources (See **BOM**)	Prototypes > Routings > Routings > [Operation Resources]
Reasons: page 1 – 16	Setup > Reasons
Reference Designators: page 2 – 41	ECOs > ECOs > [Revised Items] > [Components] > [Designators]
Reference Designators (See **BOM**)	Prototypes > Bills > Bills > [Designators]
Resources (See **BOM**)	Prototypes > Routings > Resources
Resource WhereUsed (See **BOM**)	Prototypes > Routings > Resource WhereUsed

Engineering Responsibility	
Revised Components: page 2 – 37	ECOs > ECOs > [Revised Items] > [Components]
Revised Items: page 2 – 32	ECOs > ECOs > [Revised Items]
Routing Details (See BOM)	Prototypes > Routings > Routings > [Routing Details]
Routing Documents (See BOM)	Prototypes > Routings > Documents
Routing Revisions (See BOM)	Prototypes > Routings > Routings > [Routing Revisions]
Routings (See BOM)	Prototypes > Routings > Routings
Standard Operations (See BOM)	Prototypes > Routings > Standard Operations
Start AutoImplement Manager: page 1 – 19	Setup >AutoImplement
Substitute Components: page 2 – 40	ECOs > ECOs > [Revised Items] > [Components] > [Substitutes]
Substitute Components (See BOM)	Prototypes > Bills > Bills > [Substitutes]
Transfer to Manufacturing: page 3 – 8	Transfer to Manufacturing
View ECOs: page 2 – 49	ECOs > Schedules

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Oracle Engineering Character Mode Forms and Corresponding GUI Windows

The following table matches character mode forms with their corresponding GUI windows or processes. This information supplements *Windows and Navigator Paths* in the product online documentation. Text in brackets ([ ]) indicates a button.

The GUI Navigator paths are based on the Engineering responsibility.

For more information on any window, navigate to the window and choose the help icon.

Character Mode Form and Menu Path	GUI Window or Process, and Navigation Path
Assign Key Flexfield Security Rules \Navigate Setup Flexfields Key Security Assign	Assign Security Rules Navigator: Setup > Flexfields > Key > Security > Assign
Assign Security Rules \Navigate Setup Flexfields Validation Security Assign	Assign Security Rules Navigator: Setup > Flexfields >Validation > Security > Assign
Bill of Material Comparison Report \Navigate Report Bill Compare	Bill Components Comparison Navigator: Prototypes > Bills > Comparison
Bill of Material Loop Report \Navigate Report Bill LoopCheck	Engineering Bill Reports Navigator: Reports > Bills
Bill of Material Structure Reports \Navigate Report Bill Structure	Engineering Bill Reports Navigator: Reports > Bills
Calculate Lead Times \Navigate Prototype Leadtimes	Calculate Lead Times Navigator: Prototypes > Routings > Lead Times
Change Organization \Navigate Other ChangeOrg	Organization Navigator: Other > Organization
Define Change Order Types \Navigate Setup ECO Types	Change Types Navigator: Setup > Change Types
Define Cross–Validation Rule \Navigate Setup Flexfields Key Rules	Cross–Validation Rules Navigator: Setup > Flexfields > Key > Rules

Table 4 – 1   (Page 1 of 7)

Character Mode Form and Menu Path	GUI Window or Process, and Navigation Path
Define Descriptive Flexfield Segments \Navigate Setup Flexfields Descriptive Segments	Descriptive Flexfield Segments Navigator: Setup > Flexfields > Descriptive > Segments
Define Descriptive Security Rule \Navigate Setup Flexfields Descriptive Security Define	Define Security Rules Navigator: Setup > Flexfield > Descriptive > Security > Define
Define Descriptive Segment Values \Navigate Setup Flexfields Descriptive Values	Segment Values Navigator: Setup > Flexfields > Descriptive > Values
Define ECO Approval Lists \Navigate Setup ECO ApprovalLists	Approval Lists Navigator: Setup > Approval Lists
Define ECO Autonumbering \Navigate Setup ECO AutoNumbering	ECO Autonumbering Navigator: Setup > AutoNumbering
Define ECO Departments \Navigate Setup ECO Department	Define ECO Department Navigator: Setup > ECO Department
Define ECO Priorities \Navigate Setup ECO Priorities	ECO Priorities Navigator: Setup > Priorities
Define ECO Reasons \Navigate Setup ECO Reasons	Reasons Navigator: Setup > Reasons
Define Employees \Navigate Setup Employee	Enter Person Navigator: Setup > Employees
Define Engineering Bill of Material \Navigate Prototype Define Bill	EngineeringBills of Material Navigator: Prototypes > Bills > Bills

Table 4 – 1   (Page 2 of 7)

Character Mode Form and Menu Path	GUI Window or Process, and Navigation Path
Define Engineering Change Order \Navigate ECO Define	Engineering Change Orders Navigator: ECOs > ECOs or Approval History Navigator: ECOs > ECOs > [Approvals] or Approval Dates Navigator: ECOs > ECOs. From the Tools menu choose View Dates or ECO Revisions Navigator: ECOs > ECOs > [ECO Revisions] or View Reference Designators Navigator: ECOs > ECOs > [Revised Items] > [Components] > [Designators] or View Substitute Components Navigator: ECOs > ECOs > [Revised Items] > [Components] > [Substitutes]
Define Engineering Item \Navigate Prototype Define Item Item	Engineering Master Item Navigator: Prototypes > Items > Master Items or Engineering Organization Item Navigator: Prototypes > Items > Organization Items
Define Engineering Item Revision \Navigate Prototype Define Item Revision	Item Revisions Navigator: Prototypes > Bills > Bills > [Revision]
Define Engineering Routing \Navigate Prototype Define Routing	Engineering Routings Navigator: Prototypes > Routings > Routings or Routing Details Navigator: Prototypes > Routings > Routings > [Routing Details]

Table 4 – 1   (Page 3 of 7)

Character Mode Form and Menu Path	GUI Window or Process, and Navigation Path
Define Item Catalog Groups \Navigate Prototype Inventory Catalog Define	Item Catalog Groups Navigator: Prototypes > Items > Catalog Groups
Define Item Cross–References \Navigate Prototype Inventory Cross–Reference	Assign Cross Reference Navigator: Prototypes > Items > Cross References > [Assign]
Define Item Relationships \Navigate Prototype Inventory RelatedItems	Item Relationships Navigator: Prototypes > Items > Related Items > [Find]
Define Item Template \Navigate prototype Inventory Template	Item Template Navigator: Prototypes > Items > Templates > [Find] > Item Templates Summary > [Open]
Define Key Flexfield Security Rule . \Navigate Setup Flexfields Key Security Define	Define Security Rules Navigator: Setup > Flexfields > Key > Security > Define
Define Key Flexfield Segments \Navigate Setup Flexfields Key Segments	Key Flexfield Segments Navigator: Setup > Flexfields > Key > Segments
Define Key Segment Values \Navigate Setup Flexfields Key Values	Segment Values Navigator: Setup > Flexfields > Key > Values
Define Rollup Groups \Navigate Setup Flexfields Key Groups	Rollup Groups Navigator: Setup > Flexfields > Key > Groups
Define Security Rule \Navigate Setup Flexfields Validation Security Define	Define Security Rules Navigator: Setup > Flexfields >Validation > Security > Define
Define Segment Values \Navigate Setup Flexfields Validation Values	Segment Values Navigator: Setup > Flexfields >Validation > Values
Define Shorthand Aliases \Navigate Setup Flexfields Key Aliases	Shorthand Aliases Navigator: Setup > Flexfields > Key > Aliases
Define Value Set \Navigate Setup Flexfields Validation Set	Value Sets Navigator: Setup > Flexfields > Validation > Sets
Delete Item Information \Navigate Prototype Delete	Engineering Deletion Groups Navigator: Delete Item Report

Table 4 – 1   (Page 4 of 7)

Character Mode Form and Menu Path	GUI Window or Process, and Navigation Path
Delete Items Report \Navigate Report Delete	Delete History Report Navigator: Reports > Delete Groups
Engineering Change Order Reports \Navigate Report ECO	Engineering Change Order Reports Navigator: Reports > ECOs
Engineering Setup Reports \Navigate Reports Setup	Engineering Setup Reports Navigator: Reports > Setup
Implement Engineering Change Orders \Navigate ECO Implement	Engineering Change Orders Navigator: ECOs > ECOs
Item Cost Information Report \Navigate Report ItemCosts	Item Cost Information Report Use the Cost Management responsibility Navigator: Report > Cost > Item
Item Reports \Navigate Report Item	Engineering Item Reports Navigator: Reports > Items
Mass Change Bills of Material \Navigate ECO MassChange	Mass Change Bills Navigator: ECOs > Mass Changes
Purge Engineering Change Orders \Navigate ECO Purge	Purge Engineering Change Orders Navigator: ECOs > Delete
Routing Reports \Navigate Reports Routing	Engineering Routing Reports Navigator: Reports > Routings
Run Reports \ Navigate Report	Submit Request window See: Submit Requests (Oracle Applications User's Guide) Navigator: Reports > Run
Search Items \Navigate Prototype Inventory Catalog Search	Item Search Navigator: Prototypes > Items > Item Search > [Find]
Start AutoImplement Manager \Navigate Setup AutoImplement	Start AutoImplement Manager Navigator: Setup >AutoImplement

Table 4 – 1   (Page 5 of 7)

Character Mode Form and Menu Path	GUI Window or Process, and Navigation Path
Transfer Engineering Data to Manufacturing \Navigate Prototype Transfer	Copy to Manufacturing Navigator: Prototypes > Copy to Manufacturing or Transfer to Manufacturing Navigator: Protoypes > Transfer to Manufacturing
Update Engineering Item/Org Attributes \Navigate Prototype Define Item Update	Item Attributes Navigator: Prototypes > Items > View Item Details > [Attributes]
Update Personal Profile Options \Navigate Other Profile	Personal Profile Values Navigator: Setup > Profiles
View Bill of Material Comparison \Navigate Inquiry Bill Compare	Bill Components Comparison Navigator: Prototypes > Bills > Comparison
View Bill of Material Details Navigate Inquiry Bill Detail	Bill Details Navigator: Prototypes > Bills > Bills > [Bill Details]
View Concurrent Requests \ Navigate Other Requests	Requests window See: Viewing Requests *(Oracle Applications User's Guide)* Navigator: Concurrent > Requests Choose: View Output button – to view Request Output View Log button – to view Request Log Use the Menu to choose: Tools > Managers – to view Manager Log
View Engineering Change Order Details \Navigate Inquiry ECO Details	Engineering Change Orders Navigator: ECOs > ECOs
View Engineering Change Order Schedule \Navigate Inquiry ECO Schedule	View ECOs Navigator: ECOs > Schedules
View Engineering Delete History \Navigate Inquiry DeleteHistory	Warning: Engineering Deletion Groups Navigator: Prototypes > Routings > Delete Groups
View Indented Bill of Material \Navigate Inquiry Bill Indented	Indented Bills of Material Navigator: Prototypes > Bills > Indented Bills

Table 4 – 1   (Page 6 of 7)

Character Mode Form and Menu Path	GUI Window or Process, and Navigation Path
View Item Attributes \Navigate Inquiry Item Attributes	Item Attributes Navigator: Prototypes > Items > View Item Details > [Attributes]
View Item Revision Navigate Inquiry Item Revision	Item Revisions Navigator: Prototypes > Bills > Bills > [Revision] or Revised Items Navigator: ECOs > ECOs > [Revised Items] > [Revisions]
View Item Usage \Navigate Inquiry WhereUsed Item	Item WhereUsed Navigator: Prototypes > Bills > Item WhereUsed
View Routing Details \Navigate Inquiry Routing	EngineeringRoutings Navigator: Prototypes > Routings > Routings

Table 4 – 1   (Page 7 of 7)

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B

Oracle Engineering Alerts

$\mathbf{T}$ his appendix describes the pre–coded alerts included with Oracle Engineering.

Engineering Alerts

Engineering includes these pre-coded alerts that you can use with or without customizing.

ECO Approval Notification

This alert notifies all the approvers on an ECO's approval list that an ECO requires their approval

Alert Type   Periodic

Periodicity   Every *n* business days

Inputs   Organization

Distribution   Approvers for the ECO

```
To:      Henry Smith
From:    Oracle Alert
Subject: Approval Requested for ECO - ECO7
--------------------

The following Engineering Change Order needs your approval.
Please take the appropriate action and inform the Requestor
below.

Organization:      BM1     BOM Test Org 1

  ECO:             ECO7              Reason: Cost
  Priority:
  Approver List:   appr1
  Approver:        Mecker, Satyajit Singh
  Requestor:

    Revised Item:    E:EDEI_watch
    Description:     Watch
    Effective Date: 31-JUL-93         New Revision: 1

Oracle Alert
```

ECO Use Up Date

This alert notifies the ECO planner that a plan date for a use-up item has changed.

Alert Type   Periodic

Periodicity   Every *n* business days

Inputs   Organization

Distribution   ECO requestor

Example:

```
To:      Henry Smith
From:    Oracle Alert
Subject: ECO revised item use up dates
--------------
ECO scheduled dates for the following revised items do not
match their use up dates in MRP.  Please take the necessary
action.

Organization: MR1  MRP Organization 1
      Planner: PRUBINFE      Description: Paul

                                   |------- Use Up -------|
ECO         Revised Item   Sch. Date  Item   Plan      Date
----------  --------------- --------- ----- -------- ---------
pxr-013     M-pxr-b         28-JAN-94 M-pxr-b  NF-MRP 13-APR-94


Oracle Alert
```

See Also

Overview of Oracle Alert, *Oracle Applications Alert User's Guide*

Customizing Predefined Alerts, *Oracle Applications Alert User's Guide*

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C

Oracle Engineering Special Menu

This appendix describes the options on the Oracle Engineering Tools menu.

Engineering Tools menu

Change the status of ECOs and ECO revised items by using the Tools menu and choosing a status. Other functions available from the Oracle Engineering Tools menu include:

Reschedule   Opens the Reschedule window to reschedule ECOs and ECO revised items. To reschedule ECOs, the Engineering Change Orders: Reschedule security function must be included as part of the responsibility.

Enter Costs   Opens the ECO Costs window so that you can enter engineering or manufacturing implementation costs.

Copy Bill from   Opens the Copy Bill window so that you can copy a bill into an ECO.

Check for Loops   Verifies that a bill does not contain items are not listed as components of the same item.

Opens the Approval Dates window which shows the date the ECO approval list was requested, the date it was approved, or the days remaining for approval to take place.

Abort Approvals   Aborts the Workflow approval process. This is only available if the ECO approval status is Approval Requested. This is only available if the ECO: Approvals security function is included as part of the responsibility.

See Also

Changing the ECO Status: page 2 – 29

ECO Statuses: page 2 – 58

ECO Revised Item Statuses: page 2 – 58

Rescheduling an ECO or Revised Items: page 2 – 28

Defining Implementation Costs: page 2 – 31

Copying Bill and Routing Information, *Oracle Bills of Material User's Guide*

Checking for Bill Loops, *Oracle Bills of Material User's Guide*

Assigning an ECO Approval List and Status: page 2 – 26

Engineering Profile Options and Security Functions: page 1 – 20

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GLOSSARY

activity   A business action or task which uses a resource or incurs a cost.

alternate bill of material   An alternate list of component items you can use to produce an assembly.

alternate routing   An alternate manufacturing process you can use to produce an assembly.

ANSI   American National Standards Institute which establishes national standards for the United States. The parent organization for X12 and also serves as the North American representative to ISO (International Standards Organization).

approval list   A group of employees that review and control engineering change orders (ECOs). When you create an ECO, you can assign an approval list and an approval status. Oracle Alert automatically notifies each approver when an ECO requires their approval.

approval status   A classification you can use to track an ECO's approval cycle. Approval statuses include: **Not ready to approve, Ready to approve, Approval requested, Approved,** and **Rejected.** Oracle Alert automatically notifies each approver when an ECO's approval status is set to **Ready to approve.**

assigned units   The number of resource units assigned to work at an operation in a routing. For example, if you have 10 units of machine resource available at a department, you can assign up to 10 of these units to an operation in a routing. The more units you assign, the less elapsed time Work in Process schedules for the operation.

autocharge   A method of charging a discrete job or repetitive schedule for the resources consumed at an operation.

autoimplement   To implement an ECO's revised item automatically on its effective date by setting the revised item status to **Scheduled** and running the autoimplement manager.

autoimplement manager   An Engineering program that automatically implements all ECO revised items with a status of **Scheduled** and whose effective date is less than or equal to the current date.

autonumber   A function to automatically default engineering change order (ECO) numbers when you create a new ECO. You can define an autonumber prefix and sequence for all users across all organizations, all users in one organization, one user across all organizations, and one user in one organization.

bill of material   A list of component items associated with a parent item and information about how each item relates to the parent item. Oracle Manufacturing supports standard, model, option class, and planning bills. The item information on a bill depends on the item type and bill type. The most common type of bill is a standard bill of material. A standard bill of material lists the components associated with a product or subassembly. It specifies the required quantity for each component plus other information to control work in process, material planning, and other Oracle Manufacturing functions. Also known as **product structures.**

bill revision A specific version of an item which specifies the components that are active for a date range.

BOM item type An item classification that determines the items you can use as components in a bill of material. BOM Item types include standard, model, option class, and planning items.

by–product Material produced as a residual of a production process. Represented by negative usage in the bill of material for an assembly.

capacity units The number of units of a resource available in a department. For example, the number of machines.

charge type *See* autocharge

common bill of material An assembly that uses the bill of material of another assembly as its bill. This enables you to reduce your maintenance effort by sharing the same bill structure among two or more assemblies. For example, if you have identical bills of material that produce the same product in two different organizations, you can define common bills of material for the identical structures.

common routing A routing that uses the routing of another assembly as its routing. This enables you to reduce your maintenance effort by sharing the same routing and operations for two or more assemblies.

component demand Demand passed down from a parent assembly to a component.

component item An item associated with a parent item on a bill of material.

component yield The percent of the amount of a component you want to issue to build an assembly that actually becomes part of that assembly. Or, the amount of a component you require to build plus the amount of the component you lose or waste while building an assembly. For example, a yield factor of 0.90 means that only 90% of the usage quantity of the component on a bill actually becomes part of the finished assembly.

configurator A form that allows you to choose options available for a particular model, thus defining a particular configuration for the model.

configure–to–order An environment where you enter customer orders by choosing a base model and then selecting options from a list of choices.

count point operation A default operation to move to and from where you record move and charge resource transactions. Also known as **pay point**.

cumulative manufacturing lead time The total time required to make an item if you had all raw materials in stock but had to make all subassemblies level by level. Bills of Material automatically calculates this value. Purchased items have no cumulative manufacturing lead time.

cumulative total lead time The total time required to make an item if no inventory existed and you had to order all the raw materials and make all subassemblies level by level. Bills of Material automatically calculates this value.

delete entity An item, bill of material or routing you choose to delete.

delete group A set of items, bills, and routings you choose to delete.

delete subentity A component or operation you choose to delete.

deletion constraint A business rule that restricts the entities you can delete. A deletion constraint is a test that must succeed before an item, bill, or routing can be deleted.

detailed scheduling A method of scheduling production that considers minute to minute resource availability information as well as exact resource requirements from routings.

disable date A date when an Oracle Manufacturing function is no longer available for use. For example, this could be the date on which a bill of material component or routing operation is no longer active, or the date a forecast or master schedule is no longer valid.

disposition Directions that describe how to dispose of inventory affected by an ECO. Engineering uses ECO disposition for informational purposes only.

dynamic lead time offsetting A scheduling method that quickly estimates the start date of an order, operation, or resource. Dynamic lead time offsetting schedules using the organization workday calendar.

effective date Date when an Oracle Manufacturing function is available for use. For example, this could be the date a bill of material component or routing operation becomes effective, or the date you anticipate revised item changes become part of a bill of material and can no longer be controlled by an ECO.

engineer–to–order An environment where customers order unique configurations for which engineering must define and release custom bills for material and routings. Oracle Manufacturing does not provide special support for this environment beyond the support it provides for assemble–to–order manufacturing.

engineering change order (ECO) A record of revisions to one or more items usually released by engineering.

engineering change order department A group of users that use the engineering change order system. You assign users to an ECO department to control access to your ECOs.

engineering change order reason The purpose of an ECO.

engineering change order status A classification you can use to track and control an ECO's life cycle. ECO statuses include: **Open, Hold, Release, Schedule, Implement, and Cancelled.**

engineering change order type An ECO field that identifies the originating ECO department and the items you can include on an ECO (manufacturing or engineering).

engineering item A prototype part, material, subassembly, assembly, or product you have not yet released to production. You can order, stock, and build engineering items.

fixed lead time The portion of the time required to make an assembly independent of order quantity, such as time for setup or teardown.

flow manufacturing Manufacturing philosophy utilizing production lines and schedules instead of work orders to drive production. Mixed models are grouped into families and produced on lines balanced to the TAKT time.

implement To make an ECO active so that no further changes can be made to that ECO. Usually, the day you implement an ECO is also the effective date for component changes. After that date, you must make further changes through a new ECO or directly to the bill.

implementation date The date a component becomes part of a bill of material and is no longer controlled through an ECO. Implementation date does not necessarily equal the effective date.

included item A standard mandatory component in a bill, indicating that it ships (if shippable) whenever its parent item is shipped. Included items are components of models, kits, and option classes.

item Anything you make, purchase, or sell, including components, subassemblies, finished products, or supplies. Oracle Manufacturing also uses items to represent planning items that you can forecast, standard lines that you can include on invoices, and option classes you can use to group options in model and option class bills.

item sequence The sequence of the component item on the bill of material used to sort components on reports.

lead time lot size The item quantity used to compute the fixed and variable portions of manufacturing lead time. For manufactured items, the processing lead time represents the time required to build this quantity.

make–to–order An environment where customers order unique configurations that must be manufactured using multiple discrete jobs and/or final assembly orders where the product from one discrete job is required as a component on another discrete job. Oracle Manufacturing does not provide special support for this environment beyond the support it provides for assemble–to–order manufacturing.

mandatory component A component in a bill that is not optional. Bills of Material distinguishes required components from options in model and option class bills of material. Mandatory components in pick–to–order model bills are often referred to as included items, especially if they are shippable.

mass change order A record of a plan to replace, delete, or update one or more component items in many bills of material at the same time.

minimum transfer quantity The minimum number of assemblies to move from your current operation to the next. Work in Process warns you when you move less than the minimum transfer quantity.

model bill of material A bill of material for a model item. A model bill lists option classes and options available when you place an order for the model item.

model item An item whose bill of material lists options and option classes available when you place an order for the model item.

occurrence An individual quality result. For example, a measurement that falls in or out of a specified tolerance. Occurrences can be charted using Oracle Quality.

offset percent An operation resource field that holds the percent of total manufacturing lead time required for previous operations. For example, if all operations require a total of ten hours to perform and the offset percent for a resource is 40%, then the resource is used four hours after the start of the first operation.

operation A step in a manufacturing process where you perform work on, add value to, and consume department resources for an assembly.

operation code A label that identifies a standard operation.

operation instructions Directions that describe how to perform an operation.

operation offset Elapsed days from the start of your first operation until the beginning of your current operation.

operation sequence A number that orders operations in a routing relative to each other.

option class item An item whose bill of material contains a list of related options.

option dependent operation An operation in a model or option class item's routing that appears in a configuration item routing only if the configuration contains an option that references that operation.

postprocessing lead time The time required to receive a purchased item into inventory from the initial supplier receipt, such as the time required to deliver an order from the receiving dock to its final destination.

reference designator An optional identifier you can assign to a component on a bill. For example, when the bill requires four of a component, you can assign four reference designators to that component, one for each usage.

requestor The employee that creates an ECO or requests approval for an ECO.

resource Anything of value, except material and cash, required to manufacture, cost, and schedule products. Resources include people, tools, machines, labor purchased from a supplier, and physical space.

resource basis The basis for resource usage quantity that indicates whether that quantity is required per item or per lot.

resource sequence The number that indicates the order of a resource in an operation relative to other resources.

revised component Component changes to an assembly that is a revised item on an ECO.

revised item Any item you change on an engineering change order. Revised items may be purchased items, subassemblies, finished goods.

revised item status A classification you can use to track and control a revised item's life cycle. Revised item statuses include **Open, Released, Scheduled, Hold, Implemented,** and **Cancelled.**

revision A particular version of an item, bill of material, or routing.

revision control An inventory control option that tracks inventory by item revision and forces you to specify a revision for each material transaction.

routing A sequence of manufacturing operations that you perform to manufacture an assembly. A routing consists of an item, a series of operations, an operation sequence, and operation effective dates.

routing revision A specific version of a routing that specifies the operations that are active for a date range.

setup time The time required to for a machine or work center to convert from the production of one item to another.

shift A scheduled period of work for a department within an organization.

standard operation A commonly used operation you can define as a template for use in defining future routing operations.

standard rate The frozen standard unit cost for a resource.

subinventory Subdivision of an organization, representing either a physical area or a logical grouping of items, such as a storeroom or receiving dock.

substitute item An item that can be used in place of a component. Master Scheduling/MRP suggests substitutes items on some reports.

supply A quantity of materials available for use. Supply is replenished in response to demand or anticipated demand.

supply type A bill of material component field that controls issue transactions from inventory to work in process. Supply types supported by Work in Process include: **Push, Assembly pull, Operation pull, Bulk, Supplier, Phantom,** and **Based on bill.**

teardown time The time required to clean up or restore a machine or work center after operation.

total lead time An item's fixed lead time plus the variable lead time multiplied by the order quantity. For lead time calculations, Bills of Material sets the order quantity to the item's standard or lead time lot size. The planning process uses the total lead time for an item in its scheduling logic to calculate order start dates from order due dates.

Update WIP When Engineering automatically implements a released revised item, the work in process requirements are automatically updated for the revised item.

usage rate The amount of a resource consumed at an operation.

use–up item A revised component whose MRP–planned order date and lead time offset determine the effective date of the revised item.

variable lead time The time required to produce one additional unit of an assembly. To compute an item's total lead time multiply variable lead time by order quantity, and add an item's fixed lead time.

workday calendar A calendar that identifies available workdays for one or more organizations. Master Scheduling/MRP, Inventory, Work in Process, and Capacity plan and schedule activities based on a calendar's available workdays.

workday exception set An entity that defines mutually exclusive sets of workday exceptions. For each organization, you can specify a workday calendar and exception set.

workday exceptions Dates that define plant or shift workday variations, including holidays, scheduled maintenance, or extended downtime.

yield *See* **component yield.**

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A75090–01

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